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THE CRIPPLED CHILD VERSUS THE CHRONIC SICK OF MASSACHUSETTS

CHAIRMAN'S ADDRESS

JAMES WARREN SEVER, M.D.

BOSTON

My original intention was to confine my observations to the problems of the care and education of the crippled child of Massachusetts.

As an exhaustive survey of this subject has not only been recently completed but presented in a remarkably clear report by the Massachusetts Department of Public Welfare, a report that could not fail to interest the medical profession and the general public as well, I will forego unnecessary repetition. I therefore desire to focus attention, first, on education and usefulness of the cripple, and, secondly, on the problem of the chronic sick.

After working for more than twenty-five years in orthopedic surgery, I am hopeful and optimistic for the constantly increasing interest in crippled children, their physical care, education and economic usefulness and the desire and interest on the part of society to give them a square deal with every opportunity for happiness.

The crippled child starts life with a great handicap, but also with an equal appeal to the love, pity and intelligent interest, not only of his parents but of the public at large and of the state in particular. The state is interested from two important angles: first, the economic usefulness of the child to himself and others, and, second, the purely humanitarian desire to alleviate suffering and correct deformities.

For the purpose of clarity I quote the definition of a crippled child adopted by the Massachusetts survey: "A Crippled Child is one who does not have the normal use of bones and muscle for education and work."

This state report shows conclusively that the interest and benevolent attention to this group of society has been steadily on the increase since 1895, when a privately conducted day school in Boston was established to "promote the education and special training of Crippled and Deformed Children" (The Industrial School for Crippled and Deformed Children). Almost simultaneously, the New England Peabody Home for Crippled Children was established. Ten years later, the Massachusetts legislature recognized the importance of providing special care and education for the crippled and deformed children of the state by the establishment of the Massachusetts State Hospital School at Canton. Since then hospital facilities, home care and rational discriminating cooperation between parents, physicians, orthopedic surgeons and school and district nurses have been steadily on the increase, with a corresponding intelligent understanding and provision for the educational and occupational training of crippled children now and in the future.

Massachusetts has twenty-one hospital schools, eighteen when one eliminates for obvious reasons the three large schools for the feebleminded, which not only care for the physical deformities but also give training in regular school courses to the patients, courses suited to their mental capacity and development, together with manual, occupational and sense training. This class of child is in no way included in this study. It seems to me a field quite apart from the group ordinarily catalogued as crippled children.

As a result of the Massachusetts survey, data concerning the entire 6,141 crippled children were obtained; first, as to the causes of crippling conditions, second, classification according to the amount and permanence of the handicap; third, classification according to noncrippling defects, and, fourth, classification according to economic prospects.

Data were also procured concerning 1,034 crippled children listed as institutional patients, known as group A. These data included: (1) their distribution in institutions, (2) classification according to age, disability and sex and (3) institutions in Massachusetts caring for crippled children of this group.

Comprehensive data on the following points were obtained concerning the 5,107 crippled children who are catalogued as noninstitutional patients, or belonging in group B: (1) whether the children were living at home or temporarily being cared for in hospitals maintaining active surgical units, (2) geographic distribution, (3) classification according to age, disability and sex, (4) treatment and (5) education.

Admitting that happiness is as indispensable and desirable for the cripple as for the normal person, it is essential that the economic future of the child be considered. All treatment should point toward reducing the handicap and, at the same time, should train the crippled child to the proper mental attitude toward his disability, which will enable him to compete with normal persons. This adjustment should begin early in life, through the combined efforts of the physician, the parents and the schools.

When the cripple has received the care and training necessary for him to take his place in the world as a self-respecting, independent and self-supporting citizen, his next need is the proper opportunity for such self-support. I refrain from quoting figures and tables and giving specific cases, all of which are far better understood and retained when read. They are clearly set

Read before the Section on Orthopedic Surgery at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 12, 1932.

forth in the report just published by the Massachusetts Department of Public Welfare relative to the "Number and Care of Crippled Children in Massachusetts," which furnishes comprehensive and instructive reading for those interested in the crippled child, who is "one who does not have the normal use of bones and muscles for education and work."

Keeping this in mind, there is one comparison of figures I should like to state briefly, to make more emphatic the points I am laying the most stress on, namely, education and usefulness through opportunity.

Comparison of the education of group B, noninstitutional patients (the largest group) with the education of all minors in Massachusetts (figures estimated from the 1929 school census and the 1930 federal census) shows that the educational status of children of group B compares favorably with that of other children.

The 1,563,127 persons under 21 years of age in Massachusetts are classified in age groups as follows: 497,622 under 7 years of age, 553,009 between 7 and 14 and 512,496 between 14 and 21.

Of the 497,622 normal children under 7 years, 26.58 per cent are receiving education and 73.42 per cent are not. Comparison with the figures for the 919 crippled children of the same age group shows a difference of 0.84 per cent in favor of the crippled child.

Of the 553,009 normal children between 7 and 14 years of age, 99.76 per cent are receiving education and 0.24 per cent are not. Comparison with the figures for 2,298 crippled children of the same age group shows a difference of 11.20 per cent in favor of the able-bodied children. This difference may be somewhat accounted for by the fact that the crippled group includes a large number of children out of school for treatment, others who are mentally unpromising as well as crippled, and also many now receiving education under the provision of the new law requiring home teaching for crippled children.

Of the 512,496 normal children between 14 and 21 years of age, 33.50 per cent are receiving education and 66.5 per cent are not; compared with the figures for 1,890 crippled children of the same age group, there is a difference of 35.65 per cent in favor of the crippled child. This difference, however, may be accounted for somewhat by the fact that the education of the cripple is often continued at an age when the able-bodied child has left school for work.

Except in a comparatively few instances, the educational problem has been met pretty squarely by the parent and child. However, there is still room for enlightened cooperation and discriminating understanding to remove doubt and prejudice, but this will undoubtedly be counteracted by the increased facilities for handling these children in the public schools and in private and special schools conducted for them, and also through the law recently enacted which provides that in every town or city where there are five crippled children who cannot attend school a teacher shall be supplied by the local school department to teach them in their homes. The result is that over thirty cities and towns give home instruction to crippled children.

Also, the services of the Rehabilitation Section of the Department of Education are available for any resident of Massachusetts of legal age for employment whose physical disability is a vocational handicap and who might reasonably expect to be fitted for remunerative employment.

The Massachusetts enactment provided for a continuing survey and supervision of the Department of Education and Public Welfare. It should make possible a broader social service for crippled children all over the state.

The service is and will be directed further toward finding the crippled, educating the parents in the necessity of suitable treatment and education for their children, insuring continuity of treatment by follow-up work and educating the public to the proper attitude toward the cripple, so that those who are able may be given the opportunity to earn their own living.

To quote the survey:

> The general public of Massachusetts has generously responded to the appeal for funds to aid the Crippled Child. It has helped to bring treatment and happiness and insisted upon every possible educational advantage.
>
> But is it now ready to give employment? When the Cripple comes seeking work does it look beyond the physical handicap to the personality? Does it realize that he is not seeking sympathy, in fact does not want it, that he has been trained and has learned by necessity the art of doing things well in spite of his handicap, that what he wants is an opportunity to prove that he can fill well the position which he seeks?

I believe that hospitals that minister to the needs of children stimulate the most urgent appeal and obtain the quickest response from a wide and generous public.

Is there a similar claim and discerning intelligent interest in the physical care and the mental adjustment of the chronically sick? What can the state do for this unfortunate group of citizens? Will private philanthropy again blaze the trail for the chronically sick as it did for the crippled child?

Will people of great wealth be willing to consider seriously and desire to endow a much needed and deserving form of charity so seldom ministered to or adequately provided for by philanthropists?

One contemplates the ever-increasing duplication of memorial libraries, monuments, chapels, windows, organs and chancels, elaborate dining and lounging halls, expensive recreational facilities donated to private schools and universities, and towers raised on every conceivable structure. As many of these bequests have been given in the memory of fathers, mothers, husbands, wives and children, one asks why people still possessing and amassing huge fortunes do not more often feel the urge and interest to give generously to a neglected group of society, the adult chronically sick of the great middle class with small incomes, men and women who, through no fault of their own or lack of industry, may become what is known as the "chronic sick"?

Despite the fact that in our states, almost every city has its general and private hospitals, and that towns, alone or in groups, maintain and support well equipped hospitals for the care of the acutely sick, hospitals that are generous and helpful for periods as long as their boards or endowments permit, sooner or later arises the question, so difficult to meet satisfactorily: "What is to become of patients discharged, who from necessity must be catalogued as 'chronic sick'?" For instance, take the large group of unfortunates who would come under the group of arthritic patients, with all that this condition involves.

Fortunately, one does not need to consider so carefully the two extremes of humanity, the rich who can afford to have all possible comforts and attention and opportunities for happiness, and the very poor who by circumstances of birth, lack of education and opportunity are generally provided for in state, county or city infirmaries or almshouses.

The medical profession at large would surely admit that these two extremes of society are far better provided for than the intermediate class, by reason of the tendency to erect expensive private wards and the philanthropic desire to maintain charitable or semi-free beds for people able to pay little or nothing. Four persons confessed that in recent long illnesses in their families the patients were cared for at home just as soon as they could safely be discharged from the hospital, in spite of the conviction that they should have remained longer. This was due to the fact that there was insufficient accommodation in the lower priced private rooms, and that the patients and their families were so distressed over the cost of the luxurious rooms, together with necessary nursing and other bills, that the situation was not conducive to a happy recovery. The feeling was unanimous that there was an immediate need and demand for more plain, simply furnished rooms, at, say, $6 a day, which would add to the peace of mind of the patients and those responsible for them; instead they were being cared for on a scale that they could ill afford and did not desire. It would be interesting to know whether this rational state of mind has been one of the chastening results of financial depression or whether it is due only to the wisdom of mature years, which teaches most of us the uselessness of nonessentials in important matters. The latter would not seem to be the prime factor, for I consulted a number of physicians, in varying fields of medicine, who insisted that the majority of their young married patients were more than ready to reject and eliminate nonessentials.

In cases of the chronic sick it is difficult to find suitable care and homes for people of slender means. Such private institutions as exist are generally crowded, with long waiting lists, or are conducted in such a manner as to be too expensive for the average income of the big middle class.

There would seem to be an urgent need for the endowment of institutions where people of refinement and education with chronic conditions can go after being discharged from the hospital and where, by the payment of reasonable sums of money, they can feel not only secure but self-respecting, and not be a burden to families unable to care and provide properly for a chronically sick person in their midst. This is especially important, since so many people who are in this group have led busy, industrious lives, earning their living in necessary, but frequently, underpaid professions.

What also seems worth considering is the question whether institutions for social betterment would be just as useful if they were run on less extravagant lines, so far as buildings, equipment and maintenance are concerned. This seems an important consideration in future requests for funds at a time when even well established and undoubtedly valuable charitable and private educational institutions are making constant appeals to the general public with not too successful or immediate results.

An executive of an important industry was recently asked why in his organization, a few years ago, with an increased output and business, they discharged certain people. He replied:

> Remember, we are not a charitable or educational institution, spending the invested funds or subsisting on the benefactions of a well solicited public. We cannot afford to keep in our employ people who do not prove that they can earn their salt or who are not essential additions to our company.

Of course one is aware of the indignant rejoinder of certain people who will immediately say that charitable and educational institutions cannot be run like a business. However, the truth remains that some successful ones can and do function satisfactorily without such lavish expenditures for nonessentials. There will be those who say that there is much wealth still untouched to endow further institutions. To whom and for what will they minister?

An ordinary inmate or observer would not presume to judge adequately of the value of the lavish expenditure displayed in schools and universities and the sumptuously equipped charitable institutions, and one does not desire to raise undue argument in regard to the relation of efficiency to the expenditure of public bequests. But one simply wonders why, if so much money is available, more people with large means do not feel encouraged to endow suitable and comfortable, not necessarily lavishly luxurious, hospitals and homes for the self-respecting chronically sick adult.

Any physician can furnish as deserving examples as the following: A librarian, finding herself crippled in late middle life, is now faced by the devastating fact that at present, cared for as she is obliged to be, in a private nursing institution, the expense is so great that unless she is fortunate enough to die in a few years, she will have exhausted her entire capital. A retired school teacher, living contentedly in a tiny apartment, doing her work and laundry and living simply as to food and pleasures, met with an accident which, after months of acute illness, left her in a condition in which she could neither take entire care of herself nor continue to stay where she was and have an attendant. This woman was not only capable of much mental happiness for herself, but she had the spirit and ability to be useful to others through her fine mental attainments, if she were where she could be of service. Her nearest relation, a niece, was married to a man whose profession entailed frequent changes of locality, if husband and wife wished to live together on a rather small salary. The patient neither felt herself entitled to nor did she desire to enter a city home, and she could not afford the cost of the average nursing home or sanatorium run as a business venture. The problem was to find suitable part time care and accommodations where she might be happy and not feel herself an object of charity.

A man crippled by arthritis and unable to work suddenly lost his devoted wife, who had been able not only to supplement their income by her own efforts, but had cared for him and their tiny home. They had two children living at a distance. A son, either from lack of sympathy or means, or a combination of both, refused to help solve this problem. A daughter, happily married to a public school teacher, not only was bringing up her little family—one child had recently had infantile paralysis—but for years had had her husband's mother living as a dependent in her home. The father neither desired to add to her burden nor to try to adjust himself to a situation that was difficult, to say the least.

These few examples are typical of many deserving American people suffering from conditions of health that would seem more bearable if the people could be more free from a financial strain, in congenial surroundings.

The average boarding house does not solicit guests of this type. There are a few well run institutions for "chronics" or "incurables," some of which have more

alluring titles engraved on their stationery and displayed over their doors. All are overcrowded with long waiting lists and, by reason of their religious faith or endowments, are largely filled with the people for whom they were designed, who are generally able to pay little or nothing. The other alternative is the city home, town poor farm or state farm, with hospital facilities. None of these institutions would seem to fit or expect to minister to the physical and spiritual needs of persons such as those just mentioned.

These people do not ask or desire unadulterated charity; they need an opportunity for reasonable care and for a chance for friendly intercourse and companionship among their contemporaries and equals.

Endowments are suggested for more institutions so built and managed that these people of slender resources can afford to enter them, not entirely as objects of charity, but as self-respecting paying guests and patients, who are able and willing to be cared for on a scale commensurate with their income. Who must make the appeal and blaze the trail for Massachusetts or other communities?

321 Dartmouth Street.

NEUROLOGIC FEATURES OF PERNICIOUS ANEMIA

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Studies of pernicious anemia have shown the presence of a wide variety of associated lesions in the central nervous system. As early as 1880, Little [1] described cephalalgia, vertigo, syncope, neuralgic pains and mental depression, along with other symptoms of pernicious anemia. The exhaustive work of Russel, Batten and Collier [2] followed that of Lichtheim,[3] Putnam [4] and Dana [5] in the early description of the spinal cord changes. Certain of the lesions described by the former authors have not received mention since. Barrett [6] and, particularly, Woltman [7] have called attention to the cerebral changes. Bastianelli,[8] Putnam and Taylor [9] and others have reported optic atrophy in association with penicious anemia. The sensory changes have been described by many authors, but the work of Hamilton and Nixon [10] is an excellent review of the subject and, in addition, reports pathologic changes in the peripheral nerves. A recent article by Michaud [11] mentions bulbar symptoms.

The present paper deals with an analysis of the neurologic aspects in patients with pernicious anemia who have been admitted to the Peter Bent Brigham Hospital from its opening in 1913 to January, 1931. There is danger of burdening the literature when such excellent reviews by Woltman,[12] Smithburn and Zerfas [13] and others are available. However, the review of such a large number of cases, 515, while containing all the more common neurologic lesions in association with pernicious anemia, presents in addition a smaller group of lesions that have not received the attention they deserve. The observations so well epitomize the literature on the subject that they deserve mention, even if in brief form.

INCIDENCE

The incidence of changes in the central nervous system in pernicious anemia has been variously reported. McCrae [14] reported 25 per cent in a series of forty patients; McPhaedran [15] found 40.9 per cent in a series of twenty-two patients, and Woltman [12] discovered changes in 80.6 per cent of 150 patients. A recent report by Smithburn and Zerfas [13] describes paresthesias as being present in 95.6 per cent of 115 patients. The great variance in incidence would seem to be largely dependent on the accepted criteria.

Michaud,[11] in his paper, bases his figure of 40 per cent on the more advanced changes.

In this series of 515 cases there were 103, or 20 per cent, of the cases with well defined cord changes marked by reflex changes and ataxia. The incidence would have been much higher if lesser changes of the nervous system had been included.

The belief, as expressed by Michaud and others, that combined system disease is seen more frequently today is borne out in this group of cases. With the summer of 1925, when liver therapy was inaugurated at the Peter Bent Brigham Hospital, as an arbitrary date, the incidence has been 26 per cent as compared with 15.9 per cent before that time.

AGE

The cord changes were found most frequently between the ages of 40 and 65. Since 1926, the majority were in the group between 50 and 65, while before that time the greatest frequency was in the 40-50 age group. Five per cent of the 103 patients were between 35 and 40 and 3 per cent in the 30-35 age group.

SEX

Combined sclerosis was found in about equal numbers in males and females. In the 103 cases of combined system disease, 48 per cent were males.

ONSET

The onset of the neurologic involvement in relation to the course of the disease pernicious anemia has been shown to be most variable. The neurologic symptoms may appear with the blood count at almost any level. A review of the admission blood counts in this series shows that most frequently the range was from 2 to 2½ million red cells. Occasionally the red count was near normal. This last condition seems to have been much more frequent since the institution of liver therapy. Changes of the nervous system developed in not a few cases with a red count of slightly over 4 million, a

From the Medical Clinic of the Peter Bent Brigham Hospital, Boston.

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majority of which cases were those in which there had been failure to take sufficient of a potent liver extract.

The most frequent inaugural neurologic symptom was paresthesia, which was also characterized by its very early appearance in the disease. Girdle pain, chiefly abdominal in location, may be present as an early symptom. Of the 103 cases with combined system disease, 13 per cent presented such girdle pains. At times the pain was associated with indigestion and simulated gastric crises. In this series, the girdle pain in recent years has been quite rare. Murphy [16] states that backache may be a presenting complaint. A small group of patients complained of what was termed a "neuritis," both brachial and sciatic in location. In a rare case mental changes developed as the earliest sign.

CLINICAL FEATURES

Cerebral Manifestations.—This phase of pernicious anemia was the subject of study by Woltman. In the 515 cases of pernicious anemia reviewed here, 4.5 per cent showed psychotic trends. The mental state seemed to vary considerably and included acute deliriums, depressions, paranoid states, and memory and disposition changes. It may be observed that the patient ill with pernicious anemia is quite frequently a cantankerous, refractory patient. However, once the remission starts, the change in disposition is often remarkable.

Among the cases presenting psychotic changes which came to autopsy, several interesting changes were observed. These included a chronic pachymeningitis and leptomeningitis and, in a second case showing symptoms of short duration, a thin subdural blood clot. There was, however, no complete pathologic study of any patient in this group with cerebral manifestations.

Ophthalmoscopic Examination.—A tabulation of the ophthalmoscopic observations in the cases of pernicious anemia with combined sclerosis showed that out of eighty-seven cases with careful ophthalmoscopic examination only ten yielded evidence of retinal hemorrhage. Eight of the ten were patients who suffered chiefly from psychotic manifestations. In this series, it was observed that the patients with pernicious anemia with a well marked psychosis almost invariably had retinal hemorrhages. There appeared to be no relationship between the presence of arteriosclerotic changes as portrayed in the fundi and the development of cord changes.

Optic atrophy in pernicious anemia, while rare, has been reported. In this series of pernicious anemia cases the condition was found to be present twice.

One of these patients, a man, aged 67, has been under observation for four years. In October, 1928, a year after his first admission to the hospital, for pernicious anemia, the patient experienced an exacerbation with increase in neurologic symptoms and a failing vision. The patient stated that he had averaged three-fourths pound (340 Gm.) of liver a day, but by the time of admission in January, 1929, his vision was practically gone, and the red count had dropped to 3,600,000 with hemoglobin 75 per cent. Examination at that time showed optic atrophy, which had not been present at the time of the first admission. The Wassermann reactions of the blood and the spinal fluid were negative, and no other cause for the optic atrophy could be determined. Since that time the patient's blood has been kept at a normal level, but there has been no change in vision.

Pallor of the optic disks without signs of atrophy was reported in a small number of ophthalmoscopic examinations.

Cranial Nerve Palsies.—Russell, Batten and Collier [2] were the first and among the few observers to report cranial nerve palsies in combined system disease. In this group of cases presenting pernicious anemia there was one case of a sixth nerve palsy and two cases of seventh nerve palsy that developed in association with the disease.

Nystagmus.—This condition was found in three of this group of cases. Nystagmoid movements were not uncommon.

Speech Disturbances.—One patient was described as having a scanning type of speech; another, speech of a staccato type. A third patient had a transient dysarthria associated with aphasia and subjective sensory changes in the right arm attributed to a cerebral vascular lesion.

Autonomic Disturbances.—While alterations in the pupils were rare, the condition was reported occasionally. No endophthalmus was noted.

Herpes.—While girdle pains, often severe in type, are frequently present, a herpetic condition is not usually associated with involvement of the nervous system in pernicious anemia. Russell, Batten and Collier [2] in their early report described herpes as being present. In one of their cases (case 7) in which there was a hemorrhagic herpetiform eruption, the autopsy showed a cyst occupying the center of the dorsal ganglion. In this series of cases a past history, though not specifically asking about herpes, uncovered a history of this condition in seven cases. Four of these patients suffered from herpes during their acute illness with pernicious anemia, and three of these four later developed degenerative changes in the nervous system. One of these three patients was admitted suffering from a pain similar to a pain she had had five years before, associated with herpes.

Spinal Cord.—The 20 per cent of the cases of pernicious anemia that showed definite combined sclerosis hardly deserve mention. The change brought about by posterior and lateral column degeneration are too well known for further elaboration here.

Peripheral Nerves.—While such change pathologically has been shown by Hamilton and Nixon and by others, there was not sufficient pathologic study to evaluate the question of peripheral neuritis in this series of cases.

Among the patients with cord changes there were five who complained of severe muscle pain, several of whom had pain on deep pressure over what corresponded to the greater nerve pathways. As previously mentioned, a number of patients gave "neuritis," so descriptive of their coursing pain, as the earliest complaint. Other symptoms and signs of neuritis were frequently present; their relationship to a true neuritis cannot be stated.

LABORATORY OBSERVATIONS

The laboratory studies have produced nothing that differentiates the case of pernicious anemia with changes of the nervous system from those without. The chief diagnostic measures, such as blood counts with interpretation of the smear, plus gastric analysis and such adjunctive methods as icterus indexes and hematocrit readings, were used.

Examination of the spinal fluid with normal pressure and dynamics did not give remarkable results. With a rare exception, the cell count ranged from 0 to 4. The globulin was normal except in an occasional case which showed a one plus. The colloidal gold test was almost uniformly quite level.

16. Murphy, W. P.: Personal communication to the author.

SUMMARY

A study of 515 cases of pernicious anemia occurring during the years 1913-1930 would indicate that the associated lesions of the central nervous system, present in 20 per cent of the patients, may present a variegated symptomatology and may be disseminated in location.

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INJECTION OF LIVER EXTRACT IN THE TREATMENT OF PERNICIOUS ANEMIA

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The demonstration by Minot and Murphy [1] that the feeding of liver brings about complete remission in pernicious anemia led to the development of liver extracts of various types, of which that of Cohn and his associates [2] is most generally used. A search for the effective substance in liver led to partial purification of the material, but these more or less purified substances developed by Cohn and his associates [3] and by West and his associates [4] have proved too expensive to be practical in the treatment of pernicious anemia.

To Gänsslen [5] belongs the credit of having first prepared at moderate expense an extract of liver suitable for injection intramuscularly. He injected daily into the gluteal muscles 2 cc., equal in effect to from 200 to 400 Gm. of liver.

Castle and Taylor [6] obtained a maximal response in reticulocytes from a single intravenous injection of the extract made from fraction G (343) derived from 100 Gm. of liver. It caused a fall of the blood pressure in a considerable number of cases, but this effect could be obviated by slow injection.

Strauss, Taylor and Castle [7] later produced from fraction G an extract designed for intramuscular injection, of which 20 cc., representing 100 Gm. of liver, was given daily.

Wilkinson [8] produced an extract suitable for intramuscular and intravenous use similar to fraction S of Cohn and free from carbohydrates, lipoids and proteins.

Sturgis and Isaacs [9] recently produced material suitable for intravenous injection.

Materials prepared according to the method of one of the foregoing investigators have been used by various workers, notably Schottmüller,[10] Davidson,[11] Harrington and Fleming,[12] Kähler,[13] Meythaler,[14] Aubertin and Voillemin,[15] Schilling,[16] Selander,[17] Störmer,[18] Woldrich,[19] van Leeuwen,[20] Achard and Hamburger;[21] by Billig, West-Watson and Young,[22] Essenfeld [23] and Anderson.[24]

After most of my paper had been prepared, Connery and Goldwater [25] reported on the results of the use of a more concentrated extract, in which 5 cc. represented 100 Gm. of liver; Murphy [26] reported on this preparation, and also on one still more concentrated in which 3 cc. represented 100 Gm. of liver.

CASES STUDIED

I injected liver extract in thirty unselected cases of pernicious anemia. The results in the different series are given separately and are summarized in the table. Three cases are not included in the detailed study because of insufficient observation. In one of these the injection of the less concentrated material was discontinued after two days because of the bitter complaint of pain. In one case the patient was under observation only two days after injection of the more concentrated material, and in another doubtful case, the first injection was given only two days before the completion of my paper.

Most patients were observed daily with respect to variations of reticulocytes; certain patients three times daily, during the period of active increase. Hemoglobin, erythrocytes and leukocytes were estimated in some cases daily and in others about twice weekly. Platelets were not estimated in all cases. In some cases, there were approximately weekly estimations of serum bilirubin, iron in whole blood, blood urea, blood sugar and uric acid and iron index (an index of the relative amount of iron in each erythrocyte).

Method of Treatment.—One series of twenty-one patients was treated by the intramuscular injection of material in which 2 cc. represented 10 Gm. of liver

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Because of lack of space, this article is abbreviated in THE JOURNAL by the omission of some of the illustrations. The complete article appears in the author's reprints.

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(in this paper called less concentrated material), prepared, in most instances, by one of the standard manufacturing pharmacists according to the method of Strauss, Taylor and Castle, but in a few instances by a preparation made according to their formula by Osterberg in the chemical laboratories of the Mayo Clinic. A second series of three patients was treated by the intravenous injection of a preparation made by one of the manufacturing pharmacists according to the formula of Sturgis and Isaacs, in which 20 cc. represented 100 Gm. of liver. A third series of three patients was treated by intramuscular injection of a more concentrated preparation, in which 3 cc. represented 100 Gm. of liver, and which was developed by Murphy in collaboration with Clark of Lederle & Co. (in this paper called more concentrated material).

Dosage.—The less concentrated material of Strauss, Taylor and Castle was given daily, according to their suggestion, in most instances, 2 cc. (=100 Gm. liver), in several, 4 cc., and in others, various combinations of these amounts. A few patients were given 6 cc. daily for a few injections, with a subsequent reduction to 4 or 2 cc. In several instances, a half pound of liver by mouth was substituted daily for a few days when the supply of liver extract was temporarily exhausted.

The size of the dose seemed to influence somewhat the time of appearancce of the peak of increase of reticulocytes and the time of the first appearance of their increase. In most cases in which the peak was reached earlier than the sixth day and the increase was initiated during the second or third day, larger doses had been given. In certain cases there were exceptions, as the larger doses had been given and the increase was initiated and the peak reached at a later date, and in certain other cases the smaller doses had been given and increase was earlier.

The three patients who were given the preparation of Sturgis and Isaacs intravenously were given one injection of 20 cc. (=100 Gm. liver) and one patient was given an additional injection when it appeared that the full effect of the former injection had occurred. Another patient went home four days after the first injection had been given, and the other was operated on. Two of these patients had frank pernicious anemia and one had carcinoma of the stomach associated with pernicious anemia.

The three patients who received the more concentrated preparation intramuscularly were given a small dose (0.5 cc.) to determine if reaction occurred, and in a few hours the remainder of the 3 cc. was given. A second injection of the extract derived from 100 Gm. was given on the second or third or fifth day. Two patients who were given this extract had frank pernicious anemia, and the condition of the other was doubtful; achlorhydria was not present and status epilepticus occurred after injection. One of the two patients had been given the concentrate from 12 cc. of human gastric juice, and because of the subsequent fever and poor general condition, further injections of gastric juice were not made. There was no response in reticulocytes in the ten days following the injection of the small dose of gastric juice, but a marked increase

Summary of Data

Case	Age, Years; Sex	Treatment in Hospital, Days	Before Treatment: Hemoglobin, per Cent*	Before Treatment: Erythrocytes, Millions	Before Treatment: Leukocytes	Before Treatment: Reticulated Erythrocytes, per Cent	Final Blood Examination in Hospital: Hemoglobin, per Cent	Final Blood Examination in Hospital: Erythrocytes, Millions	Final Blood Examination in Hospital: Leukocytes	Final Blood Examination in Hospital: Reticulated Erythrocytes, per Cent	Last Report: Hemoglobin, per Cent	Last Report: Erythrocytes, Millions	Last Report: Leukocytes	Daily Increase in Erythrocytes	Increase of Reticulocytes Started	Highest Reticulocyte, Percentage	Calculated Peak of Reticulocyte Increase, per Cent	Day With Highest Reticulocyte Percentage, After Treatment Started	Average Amount of Extract per Day, Cc.†	Total Gm. of Liver Represented by Extract Given
Intramuscular Less Concentrated Extract															Day					
1	50 M	21	13	0.88	8,000	2.1	63	2.78	6,000	4.4	82	5.00	9,000	90,500	3	39.6	38.0	8	2.5	270
2	56 M	18	25	0.92	4,000	0.1	65	2.47	7,400	5.2	97	4.40	7,400	86,100	3	24.4	38.0	10	2.0	180
3	70 [illegible]	30	26	0.93	6,400	3.9	44	1.65	12,900	4.7	56	1.70	7,500	24,000	10	11.9	36.2	26	2.0	300
4	49 F	21	24	1.01	4,500	2.6	66	2.90	9,000	3.6	103	4.55	14,200	89,000	2	37.8	34.6	5	4.0	430
5	50 F	21	28	1.18	2,700	7.0	50	3.38	7,800	2.0	71	3.55	6,100	110,000	3	18.0	29.0	4	4.0	420
6	53 F	18	35	1.25	4,200	0.8	55	2.90	4,800	2.8	..	3.78	.....	91,600	3	28.0	27.7	6	3.5	320
7	57 F	25	37	1.57	3,100	0.4	73	3.09	11,100	1.4	70	4.16	.....	60,800	3	10.6	20.4	8	2.4	310
8	43 F	19	31	1.61	3,000	2.8	77	2.95	5,700	2.0	75	5.11	6,400	70,500	7	13.6	20.4	9	2.7	260
9	37 M	23	28	1.68	2,300	1.0	65	3.15	5,000	2.0	90	4.68	.....	63,900	5	17.0	18.7	9	1.9	220
10	52 F	13	42	1.68	5,600	6.8	55	3.16	6,800	13.0	..	....	.....	114,000	?‡	18.8	18.7	6	2.0	130
11	50 M	21	40	1.84	3,600	4.6	73	3.14	7,500	2.8	..	....	.....	71,400	4	18.4	17.1	6	2.0	210
12	50 M	24	35	1.97	3,100	1.4	91	3.78	4,600	0.4	90	5.22	7,000	75,500	3	15.2	14.1	8	1.9	230
13	53 F	16	50	2.20	6,200	2.4	68	3.48	8,400	2.4	..	....	.....	80,000	2	17.0	11.6	5	2.8	230
14	68 M	22	65	2.30	6,000	1.8	91	3.83	10,200	1.0	80	4.81	11,000	69,500	4	16.4	10.5	9	4.0	440
15	34 M	11	61	2.34	4,200	4.7	86	3.16	6,400	3.8	..	3.80	.....	74,500	6	9.0	10.5	7	2.0	110
16	77 M	7	61	2.55	4,600	0.8	72	2.57	9,400	9.4	62	3.50	.....	3,000	4	9.4	8.0	7	3.7	130
17	53 M	10	44	2.56	7,200	5.0	55	3.07	10,200	5.0	80	4.34	11,000	51,000	?	7.8	7.5	5	2.0	100
18	57 F	20	45	2.82	11,400	1.2	66	3.34	13,500	2.8	..	....	.....	26,000	7	18.4	5.7	8	2.0	200
19	46 F	8	45	2.84	9,800	1.8	50	3.09	9,400	12.6	..	....	.....	31,200	3	12.6	5.7	8	4.0	160
20	67 M	51	60	2.88	7,100	3.4	88	4.16	10,100	1.6	..	....	.....	25,100	7	6.4	4.9	9	3.4	870
21	64 F	28	80	2.94	7,200	3.0	105	3.89	9,000	4.0	80	5.40	9,000	34,000	3	11.0	4.9	6	4.0	570
Average	54	20	41.6	1.90	5,438	2.7	69.4	3.14	8,366	4.1	79	4.26	8,860	63,885	4	17.2	18.2	8		
Intravenous															Hour					
22	44 F	7	33	1.09	3,000	1.6	49	2.18	1,400	11.0	61	3.45	3,200	156,000	52	35.2	32.0	5	...	200
23	68 F	4	32	1.32	3,400	1.0	43	1.66	3,900	25.4	..	....	.....	85,000	52	25.4	26.0	4	...	100
24	44 M	5	58	2.25	7,000	1.2	70	2.31	6,600	21.8	..	....	.....	12,000	35	21.8	11.1	5	...	100
Intramuscular More Concentrated Extract																				
25	58 M	7	45	1.35	5,800	2.2	56	2.49	6,200	11.2	..	....	.....	163,000	54	31.8	25.4	5	...	200
26	60 M	6	59	2.03	3,700	1.2	70	2.05	7,000	28.2	..	....	.....	3,300	56	38.8	13.3	5	...	200
27	54 M	7	77	2.76	6,900	5.7	78	3.17	17,500	3.4	..	....	.....	58,600	?‡	7.1	6.1	2	...	200

* For uniformity, if hemoglobin has been measured in grams it has been converted into percentage by multiplying by six.

† In the few cases in which the supply of liver extract was temporarily exhausted, half a pound of liver was given by mouth for a few days instead of 2 cc. of the extract. In estimating the total grams of liver represented by extract given, half a pound of liver is considered as the equivalent in effect of 2 cc. of the extract.

‡ In these cases the reticulocytes were at a high level at the beginning of treatment.

in reticulocytes began fifty-six hours after the injection of liver extract and reached a peak in five days.

Reactions.—The twenty-one patients who were given the less concentrated material intramuscularly, in general did not complain of unpleasant symptoms except soreness, but sometimes they complained of somewhat severe pain at the site of injection. One complained of a "funny" feeling in the head after the first injection. Fever was not noted after injection if it had not been present before. Extensive studies of blood

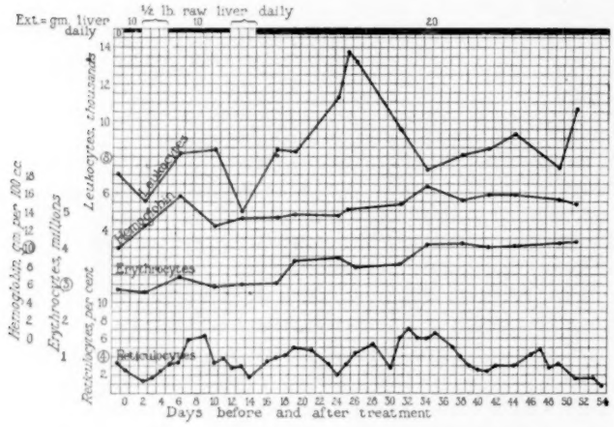

Chart 2.—Results of examination of blood in a case in which liver extract had been given intramuscularly (less concentrated). Failure of reticulocytes to rise to a high point because erythrocytes were relatively numerous at the beginning of treatment may be noted.

pressure were not made in this particular group in which frequent small doses were given.

Of the three patients who were given intravenous injections, two had a systemic reaction characterized by chill and fever to 100.6 and 103.6 F., and the other patient had fever of 102.8 F. without chill. Two patients, during the period of intravenous injection, complained of an unusual sense of heat, particularly in the face. Studies of the blood pressure were made during and following the intravenous injection, and no significant fall in blood pressure was evidenced.

Of the three patients who were given the more concentrated preparation intramuscularly, one had status epilepticus shortly after the second of two daily injections of 3 cc. (= 100 Gm. liver) had been given following a preliminary dose of 0.5 cc. without reaction. Whether this was due to the injection or to the temporary withdrawal of phenobarbital, because of phenobarbital dermatitis, cannot be determined, but the latter seems likely. This patient had the blood picture of pernicious anemia without achlorhydria, also syphilis of the central nervous system, and was given the injection as a diagnostic procedure. The blood pressure was taken frequently after the injections, and no change of consequence was noted. The other two patients did not manifest noticeable reaction after any injection. All three patients were given the preliminary dose of 0.5 cc., followed in a few hours by 2.5 cc.

Increase of Reticulocytes.—After the intramusuclar injection of the less concentrated material, the reticulocytes usually increased rather rapidly, beginning from two to ten (average four) days after the first administration and reaching a peak in from four to twenty-six (average eight) days, from which there was a rapid fall to normal within a few days (chart 1 and table). In a few cases the reticulocytes increased more slowly, in one complicated case reaching a peak on the twenty-sixth day (charts 2 and 3). The peak of increase of reticulated erythrocytes varied in the different cases from 6.4 to 39.6 per cent and averaged 17.2 per cent (table).

Following the intravenous injections the peak of reticulocytes was reached early, in four and five days (chart 4), and the increase started in thirty-five, fifty-two and fifty-two hours, respectively. The peaks of reticulocyte increase were 35.2, 25.4 and 21.8 per cent (table).

After the intramuscular injection of the concentrated extract, the reticulocytes began to rise at the fifty-fourth hour, the fifty-sixth hour and at a questionable hour and reached the peak of increase in five, five and two days (chart 5). The peaks of reticulocyte increase were 31.8, 38.8 and 7.1 per cent (table). By all methods of specific treatment, the peak of increase of reticulocytes is essentially inversely proportional to the number of erythrocytes at the beginning of treatment.

In most cases the peak of increase of reticulocytes reached or exceeded the theoretical peak, as computed according to the formula of Riddle [27] (table). In a few cases this theoretical peak was not reached, but it is likely that the actual peak of increase of reticulated erythrocytes in these cases was reached in the interval between examinations, which were, as a rule, made daily. In some cases the reticulocytes were estimated three times daily during the few days immediately preceding, during and following the peak of increase of reticulated erythrocytes (charts 4 and 5), and in these the theoretical peak was reached in each case.

Unfortunately, each of the three patients who had the intravenous injections was, for unavoidable reasons, dismissed from hospital at so early a date that little more than the increase of reticulocytes (charts 4 and 6) could be determined; one of these has been observed at weekly intervals since (chart 6), and she returned to the hospital on the thirteenth day for a second intravenous injection. It was desired to see

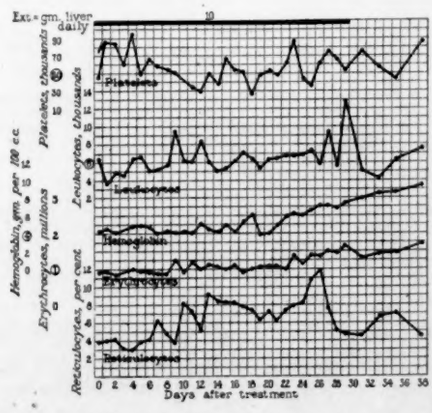

Chart 3.—Results of examination of blood in a case of pernicious anemia complicated by decompensated heart disease, while less concentrated liver extract was being given intramuscularly. Failure of reticulocytes to reach a peak for twenty-six days and the slight increase in eryhrocytes may be noted. Necropsy showed typical changes of pernicious anemia in bone marrow.

how long the effect of one injection would last so the second dose was not given until the increase of reticulocytes had entirely subsided, and a third dose has not yet been given because the level of erythrocytes and hemoglobin continued to increase thirty-four days after the last injection.

One of the three patients in this group also had carcinoma of the stomach. As soon as a rapid increase

27. Riddle, M. C.: Pernicious Anemia: Blood Regeneration During Early Remission, Arch. Int. Med. 46: 417 (Sept.) 1930.

of reticulocytes was demonstrated, as additional evidence of the existence of pernicious anemia in association with carcinoma, a transfusion was given and operation performed. A large carcinoma of the stomach was found, but could not be removed. This rapid increase of reticulocytes with liver extract is further proof of the occasional coexistence of pernicious anemia and carcinoma of the stomach. I have observed several of such cases.

Increase in Hemoglobin, Erythrocytes, Leukocytes and Platelets.—The erythrocytes on the whole increased the more rapidly the lower their level at the beginning

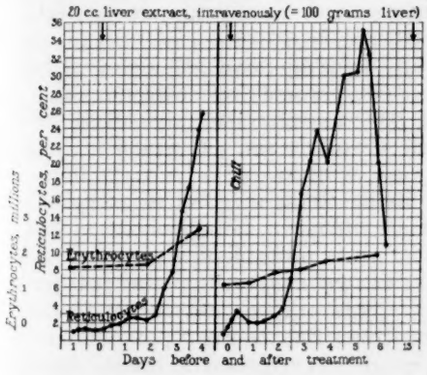

Chart 4.—Level of reticulocytes and erythrocytes in cases of pernicious anemia in which liver extract was given intravenously. Reticulocytes were counted three times daily during period of active increase. Peak on fourth (probable) and fifth day, and beginning increase soon after injection may be noted.

of treatment. The platelets increased in three fourths of the cases in which they were estimated. See table and reprints.

Morphology of Blood.—The changes in morphology of the blood were studied more carefully in cases in which the treatment was intravenous, and in those in which the more concentrated preparation was given intramuscularly. In all cases there was definite macrocytosis and well marked anisocytosis in the beginning. In most cases the so-called pernicious anemia neutrophil was present in the beginning with a shift of the polymorphonuclear leukocytes to the right. A few days after treatment was instituted the macrocytosis increased in some instances, and if this had not been well marked before treatment, it often became evident. As the condition of the blood improved, the macrocytosis usually almost completely disappeared. With the effect of treatment, the right shift in the leukocytes usually partially or completely disappeared and the so-called pernicious anemia neutrophil might or might not be entirely absent. Polychromatophilia, which was present in some degree in all cases of severe anemia, disappeared or diminished as improvement occurred. Basophilic stippling, if present in the beginning, usually disappeared. Eosinophilia was observed in only two cases during treatment. In one case the value was high (4.6 per cent) at the institution of treatment, and increased to 10.2 per cent. In the other, the eosinophils constituted 15 per cent of the total number of leukocytes at the time of institution of treatment. This patient had eaten a small amount of raw liver prior to my examination, but it seemed unlikely that the amount had been sufficient to produce eosinophilia of this degree.

Chemical Constituents of the Blood.—The changes in the chemical constituents of the blood were essentially the same in patients treated by the three different methods (chart 9). There was decrease in the bilirubin of the serum, usually to about half the original amount, the iron in the blood increased, and the iron index,[28] which apparently is always high in pernicious anemia in relapse, decreased toward normal. There was no significant change in the sugar, the uric acid or the urea of the blood.

Effect on Symptoms.—The effect of all preparations on the general symptoms was essentially the same as that obtained by the use of liver or liver extract taken by mouth, but on the whole it seemed to be brought about more rapidly; of the three methods, the intravenous administration seemed to bring about the most rapid improvement, and next to it the more concentrated material injected intramuscularly. The strength rapidly increased, the general well being of the patient was markedly enhanced, the appetite soon returned, the subicteric color of the skin and sclera disappeared, the gastro-intestinal symptoms usually subsided rapidly, diarrhea, when present, ordinarily disappeared and glossitis soon subsided.

Effect on Neurologic Disorders.—I have not noticed from the injection of any of these preparations a definite advantage over the effective materials given orally in cases of involvement of the nervous system. None of the patients among the two small groups treated by intravenous injection and by the more concentrated material intramuscularly had serious neurologic disorders. There were, however, five patients with severe neurologic involvement in the group treated with the less concentrated material, and two had moderately severe involvement. The five patients had severe combined sclerosis and were unable to walk. All but one of this group of twenty-one patients complained of numbness and tingling in the hands or feet at some time in the course of the illness. In most instances when this was the sole manifestation of neurologic involvement, symptoms improved or disappeared. However, when the symptom occurred as a part of

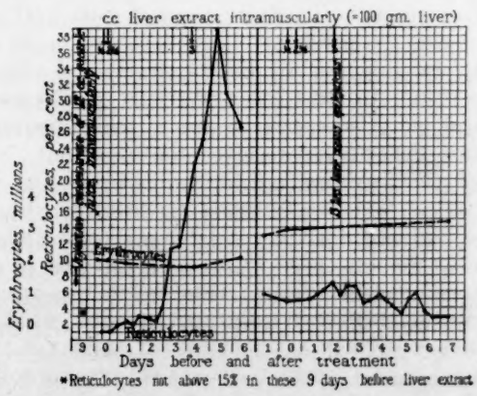
cc. liver extract intramuscularly (=100 gm. liver)
Erythrocytes, millions
Reticulocytes, per cent
Erythrocytes
Reticulocytes
Days before and after treatment
*Reticulocytes not above 15% in these 9 days before liver extract

Chart 5.—Level of reticulocytes and erythrocytes in cases of pernicious anemia in which liver extract was given intramuscularly (more concentrated). Reticulocytes were usually counted three times each day. The second case is a doubtful one without achlorhydria but with blood picture of pernicious anemia. Peak of reticulocytes in five days in first case and failure to increase much in second case, partially because reticulocytes were high at the beginning and partly because erythrocyte level was high, may be noted.

marked combined degeneration, little improvement seemed to occur. One patient, whose condition was moderately severe, was unable to write and walked with considerable difficulty before he was put under treatment. At the time he left the hospital, twenty-

28. Murphy, W. P.; Lynch, Ralph; and Howard, Isabel M.: The Value of Determinations of the Iron Content of Whole Blood, Arch. Int. Med. 47:883 (June) 1931.

two days later, he was able to walk without a cane and to write with some difficulty. A patient with moderate involvement of the nervous system did not improve in the seven days in hospital, but an answer to a questionnaire stated that he had improved considerably since going home. One patient with severe involvement of the nervous system was able to walk with great difficulty when he came to the hospital and was unable to walk when he left, although there was a

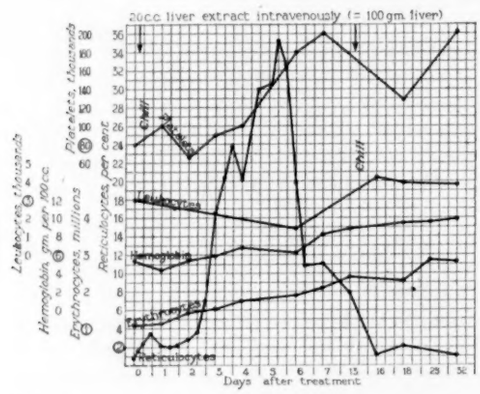

Chart 6.—Results of examination of blood in cases of pernicious anemia after intravenous injection of liver extract. Reticulocytes were counted three times a day.

satisfactory improvement in the condition of the blood. Another patient with severe involvement of the nervous system was entirely bedridden during her stay of seven days in hospital; one was entirely bedridden during the period of sixteen days of hospitalization; one with severe neurologic involvement made little, if any, improvement. One patient who had severe involvement of the nervous system following operation for carcinoma of the stomach did not improve under observation in hospital for ten days, but in answer to a questionnaire stated there was a little improvement since he went home.

It is possible that a more marked beneficial effect may occur as the result of much more prolonged treatment by the injection of liver extract, and that lack of good results in most cases of severe involvement of the neurologic system may be due to the comparatively short time the patients received the injections.

Effect of Complications on Result of Treatment.—Complications of various kinds occurred in a number of cases, but did not, as a rule, appreciably affect the progress of the recovery. Perhaps, in one case in which neurologic changes were severe, mild bronchopneumonia retarded the response to treatment. Another patient had mild bronchopneumonia, and there was fever during most of the patient's stay in the hospital, but without apparent effect on regeneration of erythrocytes. The peak of reticulocyte increase, however, in this case failed to reach the theoretic peak by a considerable degree. In two cases syphilis of the central nervous system (besides that in the doubtful case without achlorhydria) did not seem to affect the rapidity of response. In two cases there was probable cholecystitis; in one of these no effect on the increase in reticulocytes or erythrocytes seemed to occur, whereas in the other there was very slow and moderate response of reticulocytes and erythrocytes. This, however, was in the case in which pneumonia and severe neurologic changes were also present, which latter did not respond to prolonged treatment (fifty-one days) (chart 2). One patient had carcinoma of the stomach, for which he was operated on, and during his stay in the hospital, following operation, the anemia and the neurologic changes rapidly became more intense. This patient also had a cord bladder; there were two other such cases in the group. This complication, however, did not seem to influence appreciably the response to treatment. One patient had angina pectoris with coronary sclerosis, urticaria of the skin, probable abdominal urticaria and low basal metabolic rate. There was, however, a moderately rapid increase in erythrocytes, but the increase of reticulocytes failed to reach the theoretic peak by almost half. One patient had marked vertigo, nausea and nystagmus which subsided after improvement occurred in the blood. Two patients had hemorrhoids, two nontoxic adenomas of the thyroid gland, three had chronic prostatitis, one patient had hay fever, one optic atrophy, one tuberculosis of the spine, one chronic tonsillitis and one grand mal (besides the doubtful case without achlorhydria), none of which seemed to influence the speed of recovery. One patient had fever of unknown cause for three weeks, and a cord bladder; it is probable that pyelitis resulted therefrom. Cystoscopic examination was not deemed desirable. There was a good reticulocyte response with a peak higher than the theoretic peak and a very satisfactory increase in erythrocytes, but no improvement in the neurologic condition. Some patients had several of these complications combined.

In one case there was a typical blood picture of pernicious anemia with achlorhydria, high hemoglobin index and volume index and indefinite complaint of sore tongue. Daily injection of the extract derived from 10 Gm. of liver did not cause reticulocyte response for eight days, and there was practically no increase in erythrocytes from the original level of 1,000,000 cells for several weeks (chart 3). Later, the reticulocytes rose to 12 per cent and the erythrocytes to 1,700,000 but further increase could not be obtained. The patient had cardiac enlargement with

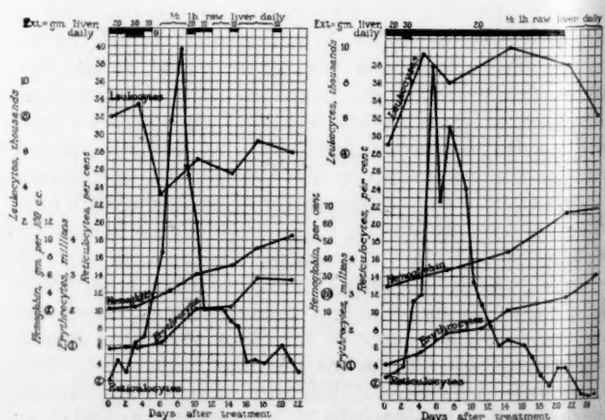

Chart 7.—Results of examination of blood in cases of pernicious anemia in which liver extract (less concentrated) was given intramuscularly. In one case, raw liver was given when the supply of extract became temporarily exhausted, and in the other, raw liver was given during the last five days in hospital. High reticulocyte peak and rapid increase in hemoglobin and erythrocytes may be noted.

severe cardiac symptoms, particularly dyspnea and edema. In spite of daily intramuscular injection of 2 cc. of the less concentrated extract she died from cardiac failure. At necropsy, in addition to other evidence of pernicious anemia, hyperplastic marrow of all the bones examined, including the shaft of the femur, was found. This was in a patient with senile dementia

confined to the state hospital, who was treated in collaboration with Dr. Everts of that institution.

Other Treatment.—Transfusion was deemed necessary in only one case, possibly because the lowest initial level of erythrocytes was 880,000. Three of the patients were given dilute hydrochloric acid; one patient was given a cod liver oil concentrate and yeast, and two patients were given food rich in vitamins, including yeast and cod liver oil or its concentrate. One patient two years previously had been given raw swine stomach at the clinic with good results, but while taking this in an amount ordinarily considered adequate she had a relapse, from which recovery was brought about by the use of extract of fish liver. Later, when taking this extract, another relapse occurred during which a very severe neurologic syndrome developed. The blood responded satisfactorily to the daily intramuscular injection of 4 cc. of the less concentrated liver extract, but there was little, if any, effect on the neurologic symptoms.

One patient had formerly been treated successfully by means of a diet rich in vitamins containing a small amount of liver. She had become careless and had practically discontinued the diet, after which she had a relapse with severe neurologic symptoms. In spite of satisfactory improvement in the blood obtained by the intramuscular use of the less concentrated liver extract, from 2 to 4 cc. daily, while in the hospital there was little, if any, improvement of neurologic condition.

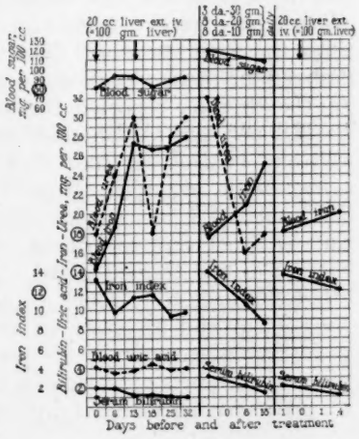

Chart 9.—Results of chemical examination of the blood in cases of pernicious anemia in which liver extract was given intravenously and less concentrated extract intramuscularly. Decrease in serum bilirubin and iron index and increase in iron of whole blood in all instances may be noted. Significant change in sugar, urea or uric acid was not observed.

One patient had formerly been given desiccated hog stomach and had a relapse while taking what would otherwise be considered an adequate dose of 30 Gm. daily; he made rapid and satisfactory response to intramuscular injection of the less concentrated liver extract.

One patient, prior to the administration of the less concentrated liver extract intramuscularly, had been given cooked oysters, a half pound daily, for fourteen days. During the administration of the oysters the reticulocytes had increased from 1.6 to 7.2 per cent. Following the administration of liver extract intramuscularly, however, there was a second increase to 18.4 per cent on the eighth day after the first injection.

Subsequent Treatment.—All of the patients who received the less concentrated preparation intramuscularly were sent home to use liver, liver extract or raw or desiccated stomach by mouth. It did not seem wise to have them make their own injections of the liver extract. Because of this fact, it has been difficult satisfactorily to evaluate the effect of the injection method on the neurologic changes in pernicious anemia, as most of the patients did not continue the treatment long enough to bring about marked change, or any change in some instances. Two of the patients who received extract intravenously were instructed to use liver at home, and the other patient is still being observed without further treatment after two injections of 20 cc. (100 Gm. liver) with an interval of thirteen days. The patients treated with the more concentrated material are still under observation in hospital.

Maintenance Dose.—As my patients were given the injections only during their stay in hospital and were given oral treatment when they were sent home, any statement regarding maintenance dosage would necessarily not be based on first-hand knowledge.

COMPARISON OF THE THREE METHODS

The results obtained by the use of the less concentrated preparation by frequently repeated intramuscular injections are not so striking as those obtained by the intravenous injections or by the intramuscular injections of the more concentrated material. The reactions with the less concentrated preparation were negligible whereas those that occurred from the intravenous injection or in one case the more concentrated material intramuscularly, were much more severe and in some instances rather alarming. The question, of course, arises whether one is justified in producing any considerable reaction by the injection of the larger doses when the smaller more frequently repeated injections are just as efficacious in the long run. There arises also the question as to whether it is not better to stimulate the bone marrow gradually by means of smaller doses than more intensely at longer intervals by injection of more concentrated material. However, the frequently repeated injections are too expensive unless one can send the patient home to carry on the injections himself, which does not seem wise. All in all, it seems quite likely that the injection treatment of choice consists of the intramuscular use of the more concentrated material, an adequate amount of which can be obtained at a comparatively small cost.

COMPARISON WITH ORAL METHOD OF TREATMENT

Since, in our experience, the neurologic changes have not responded appreciably more satisfactorily to the injection treatment (although admittedly treatment was too short to permit a satisfactory opinion) than to liver, liver extract, raw stomach, desiccated hog stomach or diet selected for its rich content of vitamins, each of which is given by mouth, it seems unlikely that the injection treatment can entirely supplant treatment by the oral method, particularly among those who do not object to the use of liver or raw stomach. Pork or beef liver and stomach can be bought at moderate cost. It may be open to question, too, whether the liver extract has all of the beneficial properties of raw liver, raw stomach or desiccated stomach. It is likely that the injection treatment will be of greatest benefit to patients who are extremely ill, patients who have extreme anorexia and are unable to take liver or other effective substance by mouth, patients who are vomiting a great deal, patients who particularly dislike liver or any of the other effective materials, and the very rare patient who manifests symptoms of gout as a result of the administration of liver.

SUMMARY

Thirty patients with pernicious anemia were given liver extract by injection. Twenty-seven were studied in hospital. Twenty-one patients received extract intramuscularly in which 2 cc. is derived from 10 Gm. of

liver, and the dose of which was 2 to 6 cc. daily. Three received extract intravenously in which the dose of 20 cc. was derived from 100 Gm. of liver. One or two doses were given in hospital. Three patients were given extract intramuscularly in which the dose of 3 cc. represented 100 Gm. of liver. Two doses were given one, two and four days apart, after a preliminary dose to determine if reaction occurred.

The extract from a very small amount of liver produces maximal effect.

The effect on reticulocytes, hemoglobin, erythrocytes and other blood elements and general symptoms is similar to but more rapid than those produced by oral treatment.

The effect on neurologic symptoms cannot be properly evaluated in this series because the patients were sent home to receive treatment by mouth or were not observed long enough to permit any opinion; however, the results obtained suggest that the effect in severe cases will continue to be unsatisfactory, as in cases in which the oral method was used.

Untoward symptoms, except pain, did not occur in cases in which intramuscular injection of the less concentrated extract was given daily. Chills occurred in two cases and fever in three cases in which intravenous injections were given. Reaction was not directly attributable to intramuscular injection of the more concentrated extract, but in one case status epilepticus occurred after the second of two injections in a case of epilepsy and syphilis of the central nervous system.

ABSTRACT OF DISCUSSION

DR. JOHN H. MUSSER, New Orleans: There is no doubt that there are certain types of patients with pernicious anemia to whom it is occasionally advisable to give liver by some method other than by mouth. I was a little worried, until Dr. Conner's last sentence, to know the reason why he had such a considerable series of patients to whom he had given this preparation. I was not worried in the sense that I feared he was going to give the preparation to all his patients, but why he had such a group of patients with severe anemia. It seems to me, of course, that the great merit of his presentation was that liver extract is available for intravenous use. I want to stress that point. I was rather afraid that the idea would get about that liver is best administered by injection. I think it would be a great mistake if such an impression should be broadcast throughout the medical profession in this country. Undoubtedly the great majority of patients with pernicious anemia will get along satisfactorily and will have a proper reticulocyte response when the liver extract is given by mouth. I think that is the method of choice in the great majority of instances. Dr. Conner has told of the patient, however, to whom liver extract cannot be given by mouth, and it is to that type only that I think liver should be given intramuscularly. The patient is extremely rare—and I think Dr. Conner will substantiate the statement—to whom the extract should be given intravenously. There are certain inherent dangers in all intravenous medication. I think intravenous medication of this type should be given in the same spirit with which drugs are administered intravenously. It is interesting that pharmacologists and those interested in the administration of animal preparations, such as insulin, are striving most vigorously for methods of administering the drug other than through injection; possibly their efforts at some time will be successful. On the other hand, there is a drug which seems satisfactory in a great majority of instances when given by mouth, and yet people all over the country are interested in this problem of giving parenterally liver extract, or the gastric juice of swine, or whatever it may be, to patients with pernicious anemia. I think it seems rather paradoxical.

DR. H. MILTON CONNER, Rochester, Minn.: I believe very much as Dr. Musser does that we are striving to see that the average patient is able to take by mouth what formerly has been given only by injection, for instance, insulin, and that, on the whole, no patient should be treated by injection either intravenously or intramuscularly who can just as well be treated by mouth. Certainly there are some cases in which, as I mentioned last, the injection method seems to me to be distinctly indicated. I am not much in sympathy, however, with the claim of lessened cost. The injection method has been stressed as being much cheaper. It certainly is not cheaper than liver or stomach. Either the raw stomach or raw or cooked liver, particularly beef or pork liver, is very cheap. So if the patient is able to take these I believe they ought to be taken orally rather than in the form of liver extract in frequent injections either intramuscularly or intravenously.

HYPERTHYROIDISM SHOWING CARBOHYDRATE METABOLISM DISTURBANCES

TEN YEARS' STUDY AND FOLLOW UP OF CASES

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For several decades writers in this country and abroad have reported the coincident finding of glycosuria in some cases of hyperthyroidism. Joslin and Lahey,[1] in their recent study of 500 cases of disease of the thyroid, reported the occurrence of glycosuria in 38.6 per cent of 228 cases of primary hyperthyroidism and in 27.7 per cent of 83 cases of adenomatous goiter with secondary hyperthyroidism, as compared with only 14.8 per cent in 189 cases of nontoxic goiter and 13.6 per cent of patients without diabetes or any disease of the thyroid gland. In a series of 100 dextrose tolerance tests which I [2] did in 82 cases of hyperthyroidism and 10 cases of colloid goiter, there was a fasting glycosuria in 19 per cent. In table 1 are given the reports of various authors as to the incidence of glycosuria in cases of hyperthyroidism.

TABLE 1.—*Glycosuria in Hyperthyroidism*

Author	Number of Cases	Percentage of Cases Showing Glycosuria
Marsh	...	2.0
Joslin and Lahey:		
Primary hyperthyroidism	228	38.6
Secondary hyperthyroidism	83	27.7
Nontoxic goiter	189	14.8
Schulze	16	25.0
John: present publication	100	19.0
Bryan:		
Toxic adenoma	244	3.2
Nontoxic adenoma	982	1.0
Exophthalmic goiter	361	1.1

When chemical analyses of the blood began to be generally used, hyperglycemia, either with or without glycosuria, was demonstrated in sporadic cases of hyperthyroidism. A review of the literature showing the incidence of hyperglycemia in hyperthyroidism (table 2) shows a great discrepancy in the findings of different investigators.

Experimental studies on animals made to determine the relation of the thyroid gland to the blood sugar content showed that extirpation of the thyroid gland

From the Cleveland Clinic.
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1. Joslin, E. P., and Lahey, F. H.: Diabetes and Hyperthyroidism, Am. J. M. Sc. **176**: 1-22 (July) 1928.
2. John, H. J.: Carbohydrate Metabolism in Hyperthyroidism, Endocrinology **11**: 497-581 (Nov.-Dec.) 1927.

leads to a lower blood sugar level, while, on the other hand, the injection of thyroxin, the feeding of hashed thyroid gland to animals or the injection of thyroid extract produces hyperglycemia. In other words, various workers tried to duplicate the clinical finding of hyperglycemia in the syndrome of hyperthyroidism. Many observations regarding the thyroid-blood sugar relation in human beings are recorded.

The incidence of hyperthyroidism among cases of diabetes is comparatively low, as can be gleaned from table 3, the average being 1.68 per cent. A diabetic patient is, of course, subject to the same ailments as is a nondiabetic person. The incidence of diabetes among cases of hyperthyroidism, on the other hand, is a fairly consistent figure, as can be gleaned from table 4, and is nearly twice as high as the general incidence of diabetes.

The present study comprises clinical and laboratory observations made over a period of ten years, including an intensive study made during the period from Jan. 1 1925, to Oct. 1, 1931. During this time, about 9,000 cases of thyroid disease have been seen in the Cleveland Clinic, most of which were cases of hyperthyroidism (exophthalmic goiter, adenoma with hyperthyroidism). Of this group, 620 cases, or 6.88 per cent, showed some degree of nonphysiologic hyperglycemia

TABLE 2.—*Incidence of Hyperglycemia in Hyperthyroidism*

Author	Number of Cases	Percentage of Cases Showing Hyperglycemia
Fitz	1,800 *	0.5
Wilder	2,340 *	0.6
von Noorden and Isaac	1,000	0.6
Wilder	1,131 †	2.0
Sattler	.....	3.0
Lund and Richardson	29	3.4
John: present publication	9,000	6.88
John: 1928	3,335	8.5
Mojarova	84	25.3
Flesch	..	60.7
Geyelin	27	90.0
Total	18,746	

* Exophthalmic goiter.
† Toxic adenoma.

(fasting or two and one-half hours or more postprandial) either with or without glycosuria. During these years, it has been the practice of my associates and myself to make a routine blood sugar estimation in every new case, as this gave much information about many unsuspected cases of diabetes which would not have been picked up otherwise. Most of the cases, which showed some degree of nonphysiologic hyperglycemia, were then followed up and studied further for a period up to ten years. These data I am offering here.

When the 620 cases showing nonphysiologic hyperglycemia were followed up further, it was found that in some cases the hyperglycemia was present in only the primary examination and that in some others the hyperglycemia disappeared without any medication. Consequently, these cases are not included in my consideration. In some other cases the patients have not been observed for a long enough period to be included in this series. In some cases inadequate data were available, and for that reason they are not included. Intensive observations over a period of from one to ten years were made on 166 cases which alone are included in this special study. All of these showed a definite disturbance of carbohydrate metabolism. The number of years the patients in this series have been under observation is shown in table 5.

By a very conservative estimate, however, I should say that about 200 cases showed what might be called definite hyperglycemia like that of diabetes. In some of these cases the hyperglycemia was purely functional in type and therefore disappeared in a few weeks or

TABLE 3.—*Incidence of Hyperthyroidism in Diabetes*

Author	Number of Cases of Diabetes	Number of Cases with Hyperthyroidism	Percentage
Greeley	614	6	0.97
Joslin and Lahey	4,917	..	....
Primary hyperthyroidism	.....	43	0.87
Toxic adenoma	.....	28	0.57
Simple goiter	.....	4	0.08
Wilder	1,249	..	....
Primary hyperthyroidism	.....	14	1.10
Toxic adenoma	.....	22	1.80
Rabinowitch	3,000	24	0.80
von Noorden	1,000	30	3.00
Murphy-Moxon	827	8	0.96
		Average	1.68

months after thyroidectomy on dietary treatment alone or combined with insulin, but—as further experience taught me—the hyperglycemia would not have disappeared in all cases without such treatment. In the total of 620 cases of hyperthyroidism in which hyperglycemia was present, it remained in 30 per cent and disappeared in 70 per cent. This makes the incidence of diabetes in this series of cases of thyroid disease 2.1 per cent, a figure that is close to the average incidence of diabetes in cases of hyperthyroidism as reported in the literature (2.3 per cent). Thus, of this series approximately 200 patients remained diabetic and had to be treated as such, and 35.7 per cent of them are still taking insulin in order to control the diabetic state.

This summarizes briefly the problem and is an answer to those who try to offer an academic discussion of this subject, which, interesting as it may be from the standpoint of the laboratory, cannot be fully adopted by a clinician who has to treat these patients, many of them for the rest of their lives.

This point is well illustrated by the report of Sattler,[3] who in 1909 collected 56 reported cases in which diabetes was associated with hyperthyroidism. Thirty-seven of these cases had been followed for a sufficient length of time to afford positive information. Of these 37 cases, in 24 (64.8 per cent) there was a fatal termi-

TABLE 4.—*Incidence of Diabetes in Hyperthyroidism*

Author	Thyroid Disease	Diabetes	Percentage
Joslin and Lahey: total hyperthyroidism	5,908	75	1.26
Primary hyperthyroidism	1,751	43	2.5
Secondary hyperthyroidism	.....	28	4.3
Sattler	1,866	56	3.0
O'Day	.....	4	...
Fitz	1,800	9	0.5
John: all thyroid diseases	9,000	207	2.3
		Average	2.31

nation within comparatively short periods of time, and in 7 cases the patients died in coma.

The incidence of diabetes in this special series of 166 cases and its distribution, according to sex and decades, are given in table 6. The highest incidence is in females, as one would expect, since the highest incidence of hyperthyroidism occurs in females. As

3. Sattler: Die Basedowische Krankheit, Leipzig, Wilhelm Engelmann, 1909, vol. 1, p. 384.

for the age distribution of the associated occurrence of diabetes and hyperthyroidism, I have tried to discover how it compares with the age incidence of diabetes without hyperthyroidism, and I have found that the two curves run quite parallel, as shown in chart 1. This suggests that hyperthyroidism does not play any important etiologic rôle so far as the age incidence is concerned. Table 7 shows clearly the priority in appearance of hyperthyroidism, which occurred in 85.5 per cent in primary hyperthyroidism and in 51.9 per cent in toxic adenomas, an observation that may have an important etiologic significance.

In table 8 I offer an analysis of the 166 cases in this series in order to show the progress of the patients. After thyroidectomy 55 per cent of the patients improved as far as their diabetic status was concerned; in 15 per cent the diabetic condition remained stationary, and in 30 per cent the patients either required more insulin or, if not taking insulin, it is but a question of time until insulin will have to be administered. As stated, 35.7 per cent of the entire group are still taking insulin.

It is obvious that glycosuria in itself does not tell a great deal regarding the status of the carbohydrate metabolism unless one knows also the blood sugar

TABLE 5.—*Length of Observation on 166 Cases of Hyperthyroidism and Diabetes Over a Period of Years (John)*

Years of observation...	1	2	3	4	5	6	7	8	9	10
Number of cases.....	82	32	19	11	8	4	1	–	1	8

response to the ingestion of carbohydrates and the level of the renal permeability to sugar. In a series of 100 dextrose tolerance tests which I did [2] some years ago in 82 cases of hyperthyroidism and 10 cases of colloid goiter, 66 per cent of the curves indicated an impaired tolerance. In a larger series of 239 cases of hyperthyroidism which I [4] published in 1930, 63.5 per cent showed an impaired tolerance. Such an incidence is high and ranks as high as obesity (65.6 per cent). The renal threshold, on the other hand, estimated in 180 cases of hyperthyroidism, was low; thresholds for sugar below 180 occurred in 81.1 per cent of the cases. The average renal threshold was 147. The excretion of sugar by a patient with a low renal threshold is usually of little or no significance. The measure of sugar excretion by the application of Allen's paradoxical law,[4a] however, does throw some definite light on the differentiation of glycosuria in this group of cases and

TABLE 6.—*Incidence of Diabetes and Hyperthyroidism and its Distribution According to Sex and Decades (166 Cases; John)*

Age decade	II	III	IV	V	VI	VII	Percentage
Male	..	1	9	11	8	5	20
Female	1	4	13	37	53	23	80
Total	1	5	22	48	61	28	
Percentage	0.6	3.0	13.2	28.9	36.7	16.8	..

Joslin and Lahey: Male, 19 and female 81 per cent.

is of distinct value, as Rabinowitch has shown. However, I should offer a caution as to any hurried diagnosis until such a case has been followed up over a sufficiently long period for one to make sure of his premises, as no single laboratory functional test should ever be considered as final.

TABLE 7.—*Priority in Appearance of Hyperthyroidism or Diabetes in 152 Patients, According to Joslin*

Condition	Number of Cases	Hyperthyroidism Precedes Diabetes: Number of Cases	Hyperthyroidism Precedes Diabetes: Percentage
Primary hyperthyroidism:			
Fitz, primary and secondary not differentiated	22	21	95.5
Wilder	12	9	75.0
Joslin-Lahey	28	23	82.1
Total	62	53	85.5
Secondary hyperthyroidism: Toxic adenoma			
Wilder	19	9	47.4
Joslin-Lahey	8	5	62.5
Total	27	14	51.9
Sattler	56	37	66.0

HEPATIC LESIONS ASSOCIATED WITH HYPERTHYROIDISM

The liver in a case of hyperthyroidism is supposed to be glycogen-poor; it either does not bind dextrose or else lets it go too readily, or there is such an enormous demand for the dextrose in the body that it is rapidly used up and has no chance of being stored in the liver. In an editorial in the *Annals of Internal Medicine*,[5] regarding the hepatic lesions associated with exophthalmic goiter, the author brings out the following points: "Patients dying in exophthalmic goiter show some degree of simple or pigmented

TABLE 8.—*Analysis of 166 Cases of Hyperthyroidism and Diabetes (John)*

	Percentage
Male	20.0
Female	80.0
Diabetes severe in.....	31.0
Diabetes mild in.....	69.0
Hyperthyroidism severe in.....	35.0
Hyperthyroidism mild in.....	65.0
After thyroidectomy:	
Diabetes improved in.....	55.0
Of these still taking insulin.....	23.5
Diabetes more severe in.....	30.0
Of these still taking insulin.....	46.0
Diabetes stationary in.....	15.0
Of these still taking insulin.....	62.0
All patients still taking insulin.....	35.7

atrophy, but the most marked change was the very frequent occurrence of marked diffused fatty degenerative infiltration bearing all the earmarks of a severe toxic process (like the classic phosphorus liver). The heart and the kidneys presented a marked fatty degenerative infiltration." The author explained these changes as being the result of acute disturbances in the oxygenation of the body resulting from or dependent on the syndrome of exophthalmic goiter. "The livers further show at times a peculiar form of chronic parenchymatous hepatitis in the form of lymphocyte infiltration, bile duct proliferation and increase in stroma of the islands of Glisson." To study these changes, Weller [6] studied 44 autopsies on patients who had shown no condition other than hyperthyroidism;

4. John, H. J.: A Study of 1,100 Glucose Tolerance Tests, M. J. & Rec. **131**: 287 (March 19); 351 (April 2); 398 (April 16) 1930.

4a. The more the carbohydrate taken by a diabetic patient, the less is utilized.

5. Editorial: Hepatic Lesions Associated with Exophthalmic Goiter, Ann. Int. Med. **4**: 501 (Nov.) 1930.

6. Weller, C. V.: Hepatic Lesions Associated with Exophthalmic Goiter, Tr. A. Am. Physicians **45**: 71-76, 1930.

his report is shown in table 9, which was presented before the Association of American Physicians in 1930.

Weller summarized his findings as follows:

A well marked chronic parenchymatous hepatitis was found at autopsy in 22 of 44 selected cases of Graves' disease, while but one case of the same degree of hepatic lesions was found in a control series of the same number of autopsies. In the Graves' disease group, only six showed no evidence of hepatitis while in the control series 30 out of the total of 44 cases showed no hepatitis. The coincidence of hepatitis with exophthalmic goiter is therefore significant and is in accord with clinical observations of the occurrence of functional disturbance of the liver in cases of Graves' disease.

Simonds and Brandes [7] rendered dogs thyrotoxic by heavy thyroid feeding (for from thirty-two to one hundred days). The livers of these dogs were practically devoid of glycogen.

Asher [8] found that in animals made absolutely free from carbohydrate by thyroid feeding and phlorhizin, the addition of fat to the food increased the output of sugar. From this he decided that the hyperthyrotic liver possesses the ability to form glycogen but cannot fix it so that after its formation it gives it up.

Charvát and Gjurič,[9] who studied the problem of carbohydrate metabolism in hyperthyroidism, came to the conclusion that the liver in cases of exophthalmic goiter is the cause of hyperglycemia because it does not bind its glycogen in a stable manner, its glycogen is labile and the tissues burn dextrose well; furthermore, in order to use up as much of the circulating dextrose as possible, the renal threshold in hyperthyroidism is raised.

TABLE 9.—*Weller's Data*

	Hyperthyroidism	Controls
Number of cases showing no hepatitis....	6	30
Number of cases showing slight or moderate hepatitis	16	13
Number of cases showing well marked hepatitis	22	1

These authors offered as an explanation that in exophthalmic goiter a condition of liver shock is present in which the glycogen-poor liver binds glycogen very loosely and lets go of it easily, whereas the tissues in patients with hyperthyroidism need sugar badly as a ready and excellent supply of energy; moreover, sugar does not burden the organism with any specific dynamic action as do fats and proteins. As the liver through the lability of its dextrose causes a marked hyperglycemia, the renal threshold is easily crossed and theoretically glycosuria should result in all cases. This, however, is not the case, as Charvát and Gjurič have shown, for the threshold rises in order to enable the tissues to use up a greater portion of the dextrose.

In view of their experiments the authors studied the arterial and the venous blood sugar for a period of several hours after the injection of physiologic solution of sodium chloride in normal persons and in patients with diabetes and again in cases of hyperthyroidism. In normal persons they found that without the injection of saline the arterial and the venous sugar fluctuates but inappreciably. After the injection of saline into normal persons, the discrepancy between arterial and venous blood is also slight (chart 2). They said that such an injection is not sufficient to mobilize the sugar, either in the tissues or in the liver.

On the other hand, the injection of saline into patients with hyperthyroidism presents a more interesting picture (chart 2). Here there is a definite dissociation between the arterial and the venous sugar. The arterial sugar rises higher than the venous sugar, which rises but little or may even be decreased. Such an injection causes shock to the liver, to which it answers by releasing its labile glycogen into the circulation. That this is in reality the liver sugar and not the tissue sugar is shown by the fact that the arterial blood sugar rises, whereas the venous sugar is not changed. There is thus a certain surplus in the arterial blood which is caught by the tissues and does not reach the venous blood. It is a well known fact that dextrose itself is the best stimulant for the utilization of dextrose by the tissues. Charvát's former work [10] showed that the burning of dextrose in the tissues of patients with hyperthyroidism is very active.

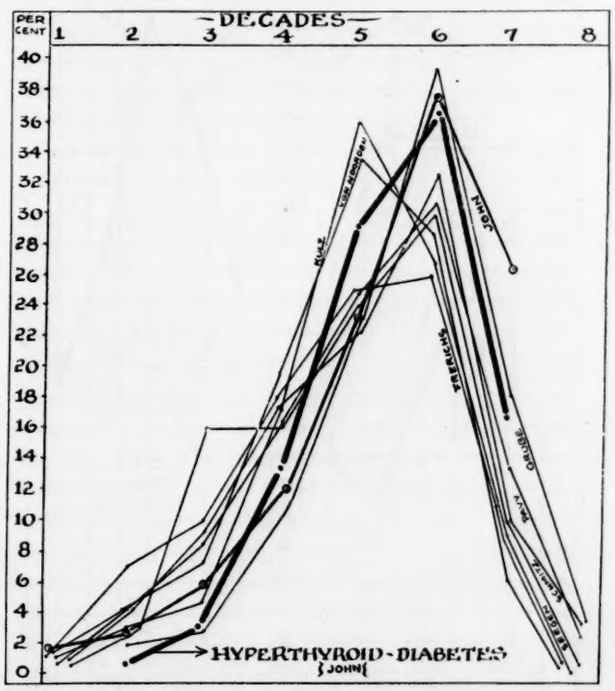

Chart 1.—The incidence of diabetes in various decades according to eight authors.

In the case of diabetic patients the picture is somewhat changed. In such a case the arterial sugar does not rise as markedly as is the case in hyperthyroidism and the curve often approaches that of normal persons. The venous sugar, on the other hand, is higher than the arterial sugar (chart 2). According to Gjurič's view, in cases of severe diabetes the tissue rather than the liver binds the sugar in a labile manner and releases it easily into the venous blood, which consequently is higher than the arterial sugar. In this manner the glycoregulatory disturbance of the patient with hyperthyroidism differs markedly from that in diabetes.

That the liver is not the chief factor in the production of hyperglycemia in hyperthyroidism is suggested by the following points:

1. The incidence of hyperglycemia in hyperthyroidism is too low.

7. Simonds, J. P., and Brandes, W. W.: The Effect of Experimental Hyperthyroidism and of Inanition on the Heart, Liver and Kidneys, Arch. Path. **9**: 445-460 (Feb.) 1930.

8. Asher, L.: The Function of Thyroid and Its Relation to Other Organs, Med. Klin. **27**: 757-760 (May 22) 1931.

9. Charvát and Gjurič: The Question of Liver and Tissue Glyco-Regulation, Rozpr. II třídy české Akad., 1926, no. 26, p. 36.

10. Charvát, J.: Metabolic Reflexes, Časop. lék. česk. **67**: 533-537, 1928.

2. The incidence of hyperglycemia in hyperthyroidism is irregular; severe cases usually show no hyperglycemia; mild cases may show pronounced hyperglycemia. If the liver were the primary factor, the degree of hyperglycemia would be proportionate to the severity of the hyperthyroidism.

3. In general, the renal threshold in patients with hyperthyroidism is low,[4] but the excretion of sugar bears no relation to the severity of the hyperthyroidism. If the storage function of the liver were at fault, glycosuria would automatically disappear after thyroidectomy, but this does not happen. In 35.3 per cent of the 166 cases reported here, the patients have to continue to take insulin, for even though the condition of the liver has improved, the pancreas still does not function sufficiently.

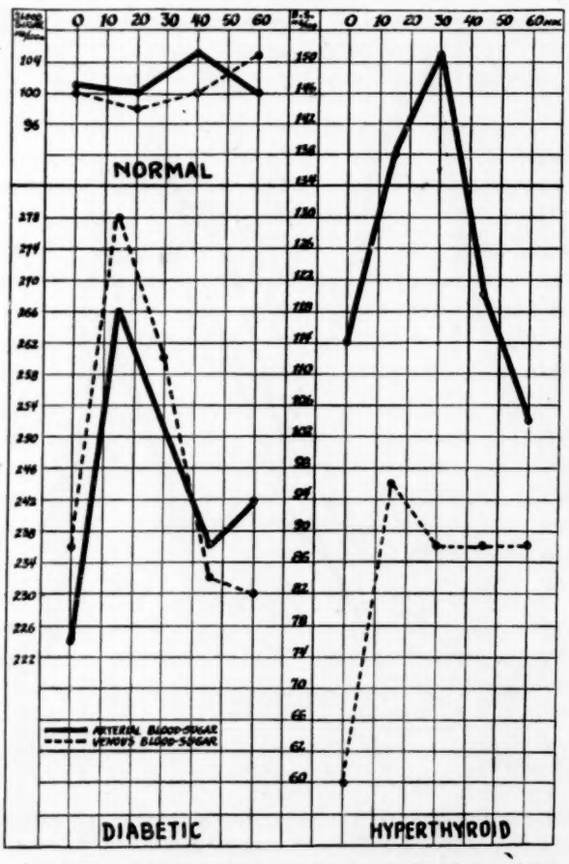

Chart 2.—Curves after the injection of 1 cc. of physiologic solution of sodium chloride per kilogram of body weight. (After Charvát and Gjurič.)

Ketone Bodies.—Thyrotoxic persons who are given a carbohydrate-free diet for two days show a marked increase of ketone bodies in the blood. In the normal person the fasting value of ketone bodies never exceeds 3.5 mg. per hundred cubic centimeters of aceto-acetic acid and 5.5 mg. per hundred cubic centimeters of beta-oxybutyric acid. In the thyrotoxic patient the ketone bodies rise as high as 16 mg. per hundred cubic centimeters of aceto-acetic acid and 18 mg. per hundred cubic centimeters of beta-oxybutyric acid. The patient with hyperthyroidism has a lowered glycogen reserve available for metabolism.

Levulose.—Strauss[11] first introduced the determination of alimentary levulosuria as a method for testing the liver function. Isaac and Adler[12] showed experimentally that of all the organs and cells of warm-blooded animals only the liver is capable of transforming levulose into dextrose. According to Isaac, the alimentary levulosuria is dependent on the fact that the part of the levulose which is not converted into glycogen or is not burned, in case of functional inability of the liver to convert levulose into dextrose, passes as levulose into the blood and is excreted as urine.

Kugelmann[13] offered the following conclusion: "We can now say with certainty that the thyrotoxic liver not only suffers severe injury in its glycogen depots but has also lost the capacity to change large amounts of levulose into dextrose and to utilize them later." (See chart 3, which represents Kugelmann's experiments along this line.)

Insulin.—Ten units of insulin given intravenously to man causes a rise of blood sugar of from 15 to 20 mg. per hundred cubic centimeters of blood in the first ten minutes, after which it falls. Bürger[14] demonstrated that this primary rise of blood sugar is dependent on the glycogen function of the liver. In none of the cases of exophthalmic goiter studied by the Bürger method by Kugelmann was this initial hyperglycemia seen. This is a further proof of poverty in glycogen in the hyperthyrotic liver.

Rathery, Kourilsky and Laurent[15] have shown that the blood sugar in depancreatized, starved, and starved and phlorhizinized dogs is distributed in the same proportions during the maximum effect of insulin as in normal animals. The discharge of glycogen from the liver is not influenced by its glycogen content. In dogs under similar experimental conditions, the hyperglycemia immediately following the administration of insulin upsets irregularly the relationship between the blood sugar in different vascular areas.

It would seem that with a little help from insulin the liver gradually resumes its capacity to bind more dextrose and keep a more even blood sugar level. Were it the state of hyperthyroidism alone which brings about the functional change that manifests itself in hyperglycemia, then one would expect the degree of hyperglycemia to bear a direct relation to the severity of the hyperthyroidism, and the incidence of hyperglycemia in cases of hyperthyroidism would be greater than it is. This is not so, however, for some of the most severe derangements of carbohydrate metabolism are found in some of the mildest cases of hyperthyroidism, and many of the most severe and even toxic states of hyperthyroidism show no disturbance of carbohydrate metabolism. Insulin brings about improvement in all cases by its direct action, by its protein-sparing action, through its influence on the storage of glycogen, on the diminution of the ketone bodies, or as the result of all four of these. The fact that disturbed carbohydrate metabolism rights itself in only the mild cases suggests that the protein-sparing function may play a rôle in the carbohydrate metabolism.

As for the clinical effect of insulin on hyperthyroidism, one may reason that it perhaps improves the

11. Strauss, J.: Untersuchungen über alimentäre spontane und diabetische Glykosurien, Ztschr. f. klin. Med. **39**: 202, 1900.

12. Isaac, W., and Adler, E.: Clinical Value of Liver Function Tests, Illinois M. J. **52**: 490-493, 1927.

13. Kugelmann, B.: Disturbances in the Carbohydrate Metabolism in Morbus Basedowii, Klin. Wchnschr. **9**: 1533-1534 (Aug. 16) 1930.

14. Bürger, M.: The Clinical Significance of the Hyperglycemic Effect Principle in Pancreas, Klin. Wchnschr. **10**: 351-354 (Feb. 21) 1931.

15. Rathery, F.; Kourilsky, R., and Laurent, Y.: Hyperglycemia Following Insulin in Dogs Under Different Conditions, Compt. rend. Soc. de biol. **103**: 864-881 (March 21) 1930.

patient's general metabolic condition, giving him a better chance to store glycogen in the liver and thus to combat acidosis; to store glycogen in the heart muscle and thus to give it a better chance to do its work; to spare protein by the increased oxidation of dextrose, and to store glycogen in the muscles and thus eliminate the instability of the organism in general. There is perhaps nothing specific about the action of insulin.

It is a good preoperative measure to give a patient 250 cc. of 10 per cent dextrose made up in saline solution intravenously, together with from 10 to 20 units of insulin, depending on the patient's condition. When the dextrose is buffered with insulin, hyperglycemia does not result even in diabetic cases, as I have shown in my observations on the intravenous administration of dextrose in cases of diabetes and in cases of acidosis as well as in ordinary surgical cases.[16] Such a procedure, therefore, is both logical and helpful, both before and after operation, for the first three days following the operation is the critical period for the patient and a little prevention goes far.

Postoperative Acidosis.—Acidosis is a well recognized complication of the postoperative course after thyroidectomy. The pulse rate in such cases is high, and the patient can become semicomatose or stuporous immediately after operation. Is the acidosis in these cases of the same type as diabetic acidosis? Diabetic acidosis is due to the inability of the organism to burn dextrose, this in turn producing an incomplete combustion of fats with the resultant accumulation of ketone bodies in the blood stream (acetone, diacetic acid, beta-oxybutyric acid) and consequent acidosis. In uncomplicated hyperthyroidism, however, there is no such inability to burn dextrose, but there are rather an inability to store glycogen and a general increase of the metabolic process, so that all the available carbohydrate, including the glycogen reserve of the liver and muscles, is often utilized with resultant hypoglycemia. Holman[17] cited a case of hyperthyroidism in which the basal metabolic rate was plus 29 and plus 35 per cent, on two occasions. After thyroidectomy the pulse rate rose to between 180 and 250 immediately after operation, this very high rate lasting for sixty hours. Twenty-four hours after the operation the patient was in a semicomatose condition, and her blood sugar at that time was found to be only 48 mg. per hundred cubic centimeters. Dextrose solution, 20 per cent, was administered, and immediately the patient became conscious. Six hours later the patient again went into a deep stupor. She was again given dextrose, and again immediately became conscious. It is clear that in this case the stupor was due to hypoglycemia, a condition similar to the hypoglycemia of an insulin reaction. This is a condition that should be borne in mind. Blood sugar studies during the postoperative period are often of great value as they tell the needs of the patient at that time.

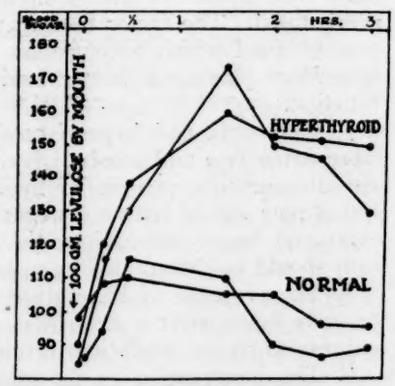

Chart 3.—Blood sugar curves of the administration of 100 Gm. of levulose. (After Kugelmann.)

Basal Metabolism.—The relationship of the basal metabolic rate to the dextrose tolerance in a series of cases of thyroid disease is shown in table 10. It will be noted that in 60.6 per cent of the cases analyzed the dextrose tolerance curve was diabetic or prediabetic in type, while the basal metabolic rates ranged from minus 3 to plus 90 per cent. The case in which the metabolism was minus 3, however, was one of simple goiter and not one of hyperthyroidism. In 39.4 per cent of the cases the dextrose tolerance curve was normal in type, and the basal metabolic rate in these cases varied from minus 3 to plus 80 per cent. On the basis of this study it seems evident that the height of the basal rate bears no relation to the carbohydrate metabolism. The mild derangements of the carbohydrate tolerance that have been observed in this series of cases may be but functional disturbances. They may disappear only in part when hyperthyroidism is eliminated either by operation or by other treatment, thus showing that there is something other than the hyperthyroidism that is playing a part.

TABLE 10.—*Relation of Basal Metabolic Rate to Dextrose Tolerance Tests in 66 Cases of Thyroid Disease (John)*

	Normal Basal Metabolic Rate	Increased Basal Rate, Percentage									Total	Percentage
		10	20	30	40	50	60	70	80	90		
Number of cases	3	11	8	11	10	10	4	4	4	1	66	....
Diabetic	2	5	3	7	5	8	3	4	2	1	40	60.6
Normal	1	6	5	4	5	2	1	0	2	0	26	39.4

COMMENT

I think that the explanation of the disturbed carbohydrate metabolism associated with hyperthyroidism is not found in the state of hyperthyroidism per se, but that it is due rather to some other factor which I believe is a "diabetic anlage" that was present in the patient before the hyperthyroidism developed; infection or obesity would have brought about the same disturbance. Thus Naunyn,[18] in 1917, made the following statement: "I consider it justifiable to draw the conclusion that the thyroid causes glycosuria only where there exists a predisposition (anlage) to diabetes."

The following statement has been made by von Noorden:[19] "Pure hyperthyroidism in the presence of a fully normal chromaffin system and a normal pancreas will very seldom produce an alimentary and spontaneous transitory glycosuria."

It is possible that in hyperthyroidism, in which one is dealing with such an unstable nervous system, the nervous regulatory mechanism may also enter into the picture. But even so, the same problem is presented. Why is it that hyperglycemia occurs in some of the mildest cases of hyperthyroidism and is not present in many of the most severe cases?

Again one may raise the question whether in hyperthyroidism one may be dealing also with hypersuprarenalism, a condition that is known to produce

16. John, H. J.: The Use of Intravenous Glucose in Diabetic Patients, Surg., Gynec. & Obst. **50**: 769-773 (April) 1930.
17. Holman, E. F.: Hypoglycemia in Exophthalmic Goiter, Bull. Johns Hopkins Hosp. **34**: 69-70 (Feb.) 1923.
18. Naunyn, Bernhard: Der Diabetes mellitus, Vienna, A. Hölder, 1906, p. 99.
19. von Noorden, C. H.: Zuckerkrankheit und ihre Behandlung, ed. 7, Berlin, A. Hirschwald, 1917, p. 41.

hyperglycemia. In some of the mild cases in which the hyperglycemia disappears after thyroidectomy, the hyperglycemia might well be due to this cause. However, were the hyperglycemia due primarily to hypersuprarenalism, one would find a much higher incidence of hyperglycemia than is found and this again would be relative to the severity of hyperthyroidism, which is not the case.

The question that is unsettled today is whether any of the factors mentioned could induce diabetes when there is no "diabetic anlage" to start with. I think not, but it is not known at present, as the background on which to base a proper interpretation of the facts that confront one and with which one has to deal is lacking.

The incidence of diabetes in hyperthyroidism is 2.1 per cent. The incidence of diabetes at large is given as 1 per cent. There is thus a 100 per cent increase of diabetes in cases of hyperthyroidism. I am inclined to think that a big factor here is the question of overeating, which is automatically brought about by the increased metabolism demanding more calories, and as the patient starts losing weight he automatically tries to compensate for this by eating more. This throws a great load on the insulogenic apparatus, which, if normal and with a good reserve, stands it well; if the reserve is small, it easily becomes exhausted and diabetes results. The condition is similar to obesity (overeating), in which, too, the incidence of diabetes is high, and the two are analogous pictures, their endresult being the same, though in one the patient is thin and in the other fat. Also the incidence of diabetes in hyperthyroidism is high from the fifth decade on, when one has to consider the problem of arteriosclerosis and endarteritis, which no doubt are contributory factors to functional changes in the insulogenic apparatus.

The medical problem involved in mild cases of disturbed carbohydrate metabolism is to protect persons with a decreased carbohydrate tolerance, rather than to let them drift along, unprotected, toward diabetes. They should be under surveillance until the physician has satisfied himself that stability has been established. In most of these cases the glycosuria disappears after thyroidectomy and the carbohydrate tolerance is restored to normal; in others, this does not happen. It is important, therefore, to make postoperative examinations in order to determine whether or not the carbohydrate metabolism has been restored to normal, and when this has not happened to institute such measures as are indicated. It is much easier to keep a diabetic patient in the mild stage of diabetes on a mild dietary routine (for that is all that is necessary in most mild cases) than to treat him successfully after a severe stage of diabetes has developed.

SUMMARY

1. No dextrose tolerance curve is specific for hyperthyroidism. That is, a definite diabetic type of curve may be present in a mild case of hyperthyroidism and a normal curve may be present in a very severe case of hyperthyroidism.

2. A single blood sugar estimation, when such a patient is first seen, is no criterion in the evaluation or even a diagnosis of diabetes in such a patient. This serves merely as a lead which should be followed up further and the true state of the patient determined. Even a high blood sugar may be just an incidental finding that clears up quickly, and another much lower blood sugar may persist as a definite diabetic condition.

3. The diagnosis of diabetes in cases of hyperthyroidism can be made only when such a patient has been studied over a sufficiently long time to determine a persistence of the defective carbohydrate metabolism. Without such a time element, many faulty diagnoses of diabetes are bound to occur.

4. Thyroidectomy lowers the total metabolism and in consequence improves the carbohydrate tolerance. In cases in which little or no improvement follows thyroidectomy this is due to the fact that lack of proper diabetic treatment or insufficient treatment has followed the operation, or else that intercurrent infections have produced further damage to the pancreas.

5. If diabetes develops after thyroidectomy, it is due either to other extraneous factors such as produce diabetes in other cases or to the fact that an insufficient amount of thyroid tissue has been removed and an active stage of hyperthyroidism persists. In the latter case, when more of the gland is removed, the diabetes is improved.

6. Hyperthyroidism plays a fundamental etiologic rôle in the disturbances of endocrine equilibrium in cases with a diabetic anlage in which diabetes can be precipitated. The factor here may be the heavy ingestion of food which accompanies active hyperthyroidism, thus placing a heavy load on the insulogenic function.

7. Glycosuria and hyperglycemia (either fasting or more often two and one-half hours after a meal) are not uncommonly present in hyperthyroidism. When found they should not be disregarded, but their significance and their relationship to the carbohydrate metabolism should be determined by appropriate tests.

8. The presence of hyperglycemia two and one-half or more hours after a meal, if it persists, is usually an expression of an insufficient insulogenic function.

9. The intervention of the menopause in a case of hyperthyroidism may cause hypertrophy of the islands of Langerhans with the resultant cure of a coincident diabetes. This probably, however, is a rare occurrence, for but few cases are reported in the literature (Rohdenburg [21]).

10. The glycogen depletion of the liver in hyperthyroidism increases the tendency to acidosis and makes a mild case of diabetes temporarily appear as a severe case. This factor is aggravated in cases in which diabetes is present. The ingestion or the intravenous administration of dextrose before or after operation, with or without insulin, according to the indication in the individual case, would seem to be a logical procedure. The factors that influence the glycogen depletion are probably the following:

(*a*) Toxic influences which directly affect the parenchyma of the liver cells.

(*b*) A high metabolic rate which causes increased consumption of carbohydrate and depletes the insulogenic stores, with resultant depletion of the glycogen store in the liver. Such a depletion is also shown in uncomplicated cases of hyperthyroidism which do not show a high blood sugar.

11. Hypersuprarenalism may also play a part in the production of hyperglycemia.

12. Patients with hyperthyroidism in whom a frank diabetic condition of severe type is not present, but

21. Rohdenburg, G. L.: Spontaneous Disappearance of Diabetes, Endocrinology **6**: 519-522 (July) 1922.

merely a mild degree of disturbance of the carbohydrate metabolism, may have but "functional" diabetes or again they may have cases of early diabetes. If appropriate treatment is not given, a frank diabetic state may develop.

13. The administration of thyroid preparations is not without danger. It may precipitate hyperthyroidism, and may even produce diabetes.

14. In my series of 100 dextrose tolerance tests in 82 cases of hyperthyroidism and 10 cases of colloid goiter, fasting glycosuria was present in 19 cases and absent in 81 cases. Sixty-six per cent of the curves indicate an impaired tolerance.

15. From the observations of these patients it would appear that the renal permeability is decreased in the active stage of hyperthyroidism. The renal threshold for dextrose was below 120 mg. per hundred cubic centimeters of blood in 35.6 per cent of the patients studied. The average renal threshold in cases of hyperthyroidism was 147 mg. per hundred cubic centimeters of blood.

OLFACTORY DISTURBANCES

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In spite of the tremendous advance made in almost every branch of otolaryngology, the knowledge of olfaction remains, with few exceptions, the same as it was thirty years ago. There are many reasons for this, one of the most important being that it is possible to investigate this sense only from a subjective standpoint. Olfaction being regarded as a nonimportant sense, few rhinologists are sufficiently interested to publish case reports and interesting observations and to follow these with postmortem examinations. Until this is done, the true story of olfaction will never be written.

There is no absolute norm in olfaction, as it may be determined either in different persons or in the same person at different times. There is a constant physiologic variation in the acuity of the sense of smell as well as a great variation in the sense feeling produced by an odor in different persons at the same time, or in the same person at different times. In addition to these physiologic variations, there are a number of conditions which vary sufficiently from the normal to be termed pathologic, and it is these that I wish to discuss at this time.

The Specht classification of respiratory disturbances is:

1. Respiratory disturbances
   - *A.* Quantitative disturbances
     1. Hyposmia
     2. Anosmia
   - *B.* Qualitative disturbances
     1. Cacosmia
2. Essential disturbances
   - *A.* Quantitative disturbances
     1. Anosmia
     2. Hyposmia
     3. Hyperosmia
   - *B.* Qualitative disturbances
     1. Parosmia
3. So called functional disturbances
   Hallucinations

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The Specht classification has the advantage of giving a good perspective of the subject, but would be difficult for listeners to follow. I have therefore adopted this simplified outline:

1. Quantitative disturbances
   - *A.* Respiratory
   - *B.* Essential
     - Hyperosmia
     - Hyposmia
     - Anosmia
2. Qualitative disturbances
   - *A.* Respiratory
   - *B.* Essential
     - Cacosmia
     - Parosmia
     - Agnosias
     - Hallucinations

It must be remembered that any classification of olfactory disturbances has only relative value since transitions and combinations are frequent. Even the border zone between the normal and pathologic is impossible to define in all cases.

QUANTITATIVE DISTURBANCES

Hyperosmia.—A person may be able to perceive certain odors in a much less concentrated form than other persons can, while for other odors his sense of smell may be normal or subnormal. It is not certain whether this is a congenital or an acquired condition. The congenital form is probably more frequent. A hyperosmia for all odors is a rare condition and is usually the result of the use of certain drugs, i. e., strychnine and cocaine. With the latter drug it is, at least in part, caused by the shrinking effect of the cocaine on the mucous membrane of the nose, the access to the olfactory area thus being facilitated. The late effect of cocaine is that of a severe olfactory depressant.

Ponzo [1] has shown that benzoyldimethylaminomethylpropanol hydrochloride also produces a hyperosmia even though it causes a swelling of the mucous membrane of the nose. Hyperosmia is also supposed to occur in pregnancy and in hysteria. Von Skramlik [2] and others have stated that this is not a true hyperosmia but is due to the neurotic condition of the patient.

Hyposmia.—In hyposmia, every degree of impaired olfactory function from the slightest defect to complete anosmia may be found. The temporary hyposmias which follow infectious diseases and nasal infections are of frequent occurrence. Not all patients recover completely. Their prognosis depends in part on the severity of the causative infection and is also influenced by the presence of such nasal complications as sinus infection. The pathology of this condition is unknown.

Anosmia.—Anosmia may be unilateral or bilateral. The condition may be temporary or permanent, partial or complete. One may differentiate between a respiratory and an essential anosmia. In the former type of anosmia, the respiratory cleft leading to the olfactory area is cut off either by pathologic conditions or by accidental injury. As a subdivision of the respiratory type may be mentioned the gustatory anosmia which is caused by an obstruction of the choana.

The essential anosmias are due either to a disease of the olfactory mucous membrane or to some intracranial pathologic condition or accident destroying the olfactory nerves or center. Anosmia may even be congenital. In this case, there is usually an absence of the olfactory nerves.

1. Ponzo, Mario: Ueber die Wirkung des Stovains auf die Organe des Geschmack, Arch. f. d. ges. Psychol. **14**: 385-436, p. 427, 1909.
2. von Skramlik, Handbuch der Physiologie der niederen Sinne, Leipzig, Georg Thieme, 1926.

Respiratory Anosmia: Under this heading may be specified as an etiologic factor any condition that causes an obstruction of one or both nostrils, i. e., nasal foreign bodies, rhinoliths, crusts, new growths, benign or malignant, deflection of the septum, enlarged turbinates or any other condition that prevents the inspiratory air current from coming in contact with the olfactory areas.

It has been noticed that destructive lesions of the ala nasi, when no involvement of the olfactory mucous membrane has taken place, are usually accompanied by some degree of anosmia. In these cases, the inspired air is not directed to the olfactory region. In a similar way, anosmia may occur following facial paralysis and collapsed alae nasi. In the acute and chronic sinus infections, there is frequently a combination of the respiratory and the essential types.

It is possible that an atrophy of disuse may develop in long-standing occlusion of the nasal passages, but this is by no means the rule.

Essential Anosmia, Type 1: It is probably futile to divide the essential anosmias into those which result from some lesion of the olfactory nerves and into those of central origin, because it is impossible to localize the lesion causing the olfactory disturbance except in those cases in which an involvement of other intracranial structures helps one to localize the site of the lesion. Nevertheless, one must hold to this classification for theoretical reasons.

If one accepts the theory that smell is the result of osmotic processes, it becomes self-evident that the slightest change in the chemistry of the cell plasma or in the cell walls must influence this process. It is therefore easily understood that an anosmia may result from fevers, any change in the amount of nasal secretion, extremes of temperature, dust, etc. In most of these conditions, the anosmia is temporary, but when an atrophy of the mucous membrane of the nose takes place, as in ozena, atrophic rhinitis or syphilis, it often becomes permanent.

Influenza is one of the most common etiologic factors, especially when it is associated with sinus infection. In these cases, the anosmia may be of a temporary nature or may become permanent; in other cases there is a partial recovery, with some or many of the smell qualities being lost.

In people with vitiligo and in albinos, olfactory disturbances have been repeatedly noticed. They were formerly supposed to be due to a lack of pigment in the olfactory mucous membrane; more recently, however, Schwartz [3] in investigating this question found a normal amount of olfactory pigment in albino squirrels, guinea-pigs, rats and mice.

Anosmia also may result from the toxic action of certain drugs, i. e., vapors of osmic acid, sulphuric acid, fluoric acid, sulphur, fumes arising from the manufacture of rubber, alcohol, tobacco, chloroform, ether, morphine, cocaine, phenol, etc. The deleterious effect of these chemicals may be due to their local action on the olfactory mucous membrane or to their toxic action after absorption into the blood stream. It is a well known fact that the application of cocaine to the olfactory area produces at first a hyperosmia due to the shrinking of the mucous membrane of the nose, thereby making the olfactory area more accessible. Later, an anosmia develops, the duration of which coincides in a general way with the time of anesthesia of the mucous membrane. Prolonged use of cocaine causes a degeneration of the mucous membrane with resulting permanent anosmia.

Fatigue Anosmia: Fatigue anosmia probably is usually of peripheral origin. It is characterized by the loss of certain smell qualities and usually is due to the exposure of the olfactory apparatus either to intense or to prolonged stimulation. Whether this fatigue is of peripheral or central origin is not known. Fatigue anosmia may be either temporary or permanent.

Traumatic Anosmia: Traumatic disturbances of smell may arise from direct injuries to the olfactory region of the nose or may result from injury to other portions of the head in which the olfactory nerve or bulb is injured indirectly. The most common causes are skull fractures in which the cribriform plate is involved. Fractures of the root of the nose are also prone to injure the olfactory apparatus. Anosmia has followed a submucous resection of the septum in which the perpendicular plate of the ethmoid was destroyed.

Congenital Anosmia: Congenital anosmia is a rare condition. Zwaardemaker stated that it is usually found in persons who have a deformity of the skull, with an absence of the lamina cribrosa. These patients frequently have other abnormalities, such as cleft palate and malformations of the septum. It is possible that many of these cases may be overlooked since it is impossible to make accurate olfactometric examinations in children.

Senile Anosmia: It has been shown that in the aged the sense of smell gradually diminishes, but complete anosmia is rare. This senile olfactory disturbance is frequently accompanied by parosmia.

Essential Anosmia, Type 2 (Intracranial): Here one must consider all of those diseases and new growths that interfere with the olfactory tract and those which involve the olfactory centers. These structures may also suffer from increased intracranial pressure from a distant source, especially that secondary to growths or abscesses in the temporal lobes, and also from neoplasms, etc., in the frontal and occipital lobes and in the pituitary body. New growths, as well as syphilis, tuberculosis and meningitis, if they occur along the floor of the frontal fossa, are especially prone to disturb the olfactory apparatus. Even hemorrhages in this region have caused olfactory disturbances. Anosmia may also follow softening of the brain and has been reported in tabes, dementia paralytica, paralysis agitans, myelitis, polyneuritis, myatonia congenita, syringomyelia, hydrocephalus, diseases of the middle cerebral artery, epilepsy, insanity and commotio cerebri.

Diagnosis of Anosmia: Owing to the apparent difficulties met with in making olfactometric examinations, few rhinologists have given serious consideration to olfactory disturbances. A fairly accurate examination of the sense of smell can be made even without special apparatus. Proetz [4] has devised a method that is both simple and accurate. The method of Bornstein [5] has an added advantage in that it includes the testing of the sense of smell, nasal taste, taste and the nasal tactile sense.

Bornstein has advocated that a complete test of these sensations should be made in each case: first, because the laity frequently confuse the sense of olfaction with that of taste (glossopharyngeal and sensory facial) and

3. Schwartz, in von Heymann: Handbuch der Laryngologie und Rhinologie, Vienna, Alfred Hölder, vol. 3, p. 673.

4. Proetz: A System of Exact Olfactometry, Ann. Otol., Rhin. & Laryng. **33**: 746-764, 1924-1925.

5. Bornstein, quoted by Laemmle: Ueber Geruchsstörungen und ihre klinische Bedeutung, Arch. f. Ohrens-, Nasen- u. Kehlkopfh. **130**: 22-42, 1931.

also that of nasal tactile sense (trigeminus) with that of olfaction; second, because the findings are of great value in making a differential diagnosis between pathologic and functional conditions. The reason for the complete examination will again be referred to under differential diagnosis.

Bornstein's (Geruchsleiter) Clinical Olfactometric Examination.—The substances used in the examination are so selected that they range from those having a very weak olfactory potency and gradually increase to a high potency. Bornstein has also taken into consideration the fact that tactile and taste components play an important rôle in the recognition of odors. His testing odors are selected from pure smell substances.

1. Wax
2. Stearin
3. Soap
4. Rosewater
5. Heliotrope
6. Bitter almond water
7. Turpentine
8. Spirit of camphor
9. Oil of lavender
10. Amyl acetate
11. Rectified oil of birch tar, N. F.
12. Anise oil
13. Sulphuric acid

Menthol (cool) and ammonia (prickling) are used to test the tactile components. The taste components are tested with chloroform (sweet) and pyridine (bitter). Bornstein uses 20 cc. glass stoppered bottles as containers for these smell substances. In testing a patient he uses the weakest solution first, each nostril being tested separately with the eyes closed. He then tests the sense of taste, using cane sugar solutions of 4, 10 and 40 per cent, a sodium chloride solution of 2, 5 and 15 per cent, a 1, 5 and 10 per cent citric acid solution and a quinine solution of 0.075 and 1 per cent:

In testing a patient's sense of smell, one must take into consideration that the sense of smell varies in different persons and in the same person at different times. This is due to a number of physical and biologic factors, i. e., the dampness of the atmosphere and the presence or absence of infection of the nasal mucous membrane.

The concentration of an odor naturally must be greater to be recognized than merely to be detected. Also, it is easier to recognize a known odor.

Having detected the presence of a hyposmia or anosmia through an olfactometric examination, it next behooves one to attempt to determine the causative factors. This may, or may not, be a difficult problem. A complete obstruction to both nares would materially point toward a respiratory disturbance. In the past, in many instances, it was impossible to prove this. The intravenous or hematogenous olfactory test of Bednar and Langfelder [6] has given a means of differentiating these two conditions. If a patient fails to perceive an odor after an intravenous injection of an odorous substance, a diagnosis of essential or psychic anosmia must be made. It was formerly thought that a psychic olfactory disturbance existed in patients in whom only a few smell qualities were missing. It is now known that this condition exists frequently in nonpsychic persons, i. e., in patients who formerly had a complete anosmia and in whom a gradual improvement of the sense of smell is taking place.

In patients with a neurosis or psychosis the results of several olfactometric examinations may vary without reason. One must observe the patient closely while making the olfactometric examination. Frequently some facial expression will reveal that he has perceived an evil smelling substance. Ammonia or menthol stimulates the trifacial, which is, of course, not involved in an anosmia. If he denies these sensations, one must be suspicious. If the patient is sufficiently intelligent to realize that these sensations are of touch, one cocainizes the nose. If he is still able to differentiate the true smell substances from those producing tactile sensations, there must be some sense of olfaction left. Every type of olfactory disturbance may be simulated in neurotic persons. Usually there are other nervous manifestations which assist in the diagnosis, i. e., hemiparesis or hemianesthesia. Another important factor in the diagnosis of a functional lesion of the olfactory apparatus is the result obtained in the Bornstein test. In functional cases there is frequently an anosmia with a loss of tactile sensation in the nose, of nasal taste and of gustatory taste sensation. A lesion sufficient to cause these symptoms would include the involvement of the olfactory, trigeminus and glossopharyngeal nerves and could easily be determined clinically. It is always necessary to make several olfactometric examinations in patients suspected of being neurotic or in cases of traumatic anosmia. Finally, the psychogalvanic reflex may be of value in determining the presence of the sense of smell in these persons.

It is impossible to differentiate the peripheral and central essential anosmias except in those cases of central anosmia in which the causative lesion produces other symptoms referable to the destruction of other cerebral structures. Because of bilateral innervation, no certainty exists as to the location of the lesion, even in unilateral anosmia. It is known that in unilateral lesions of the uncus when a hyposmia or anosmia is present, rapid compensation or equalization takes place.

The reason for this paucity of knowledge is the almost total lack of accurate postmortem examinations in cases in which olfactory disturbances have been discovered during life. Every rhinologist should attempt to procure a thorough postmortem examination in his olfactory cases. This work should be carried out only by someone especially versed in olfactory anatomy.

Disturbances of smell help to localize the site of the lesion following injuries to the skull. Frequently, olfactory disturbances are the only symptoms noticed by patients who have a traumatic skull injury. Whereas most surgeons who come in contact with a large number of skull fractures give but little or no attention to the olfactory disturbances suffered by these patients, they could be of great service to rhinologists if they could be induced to investigate this phase of the subject.

Olfactory Disturbances from a Forensic Standpoint.—It is rather a difficult question to determine the financial loss sustained by a patient in whom the sense of smell has been destroyed. Little information on this subject exists either in textbooks or in books on forensic medicine. Many people employed as butchers, bakers, cooks, brewers, wine, coffee and tea tasters, gardeners and perfumer's chemists suffer a great loss and frequently are unable to pursue their vocations. In these people the loss sustained ranges from 5 to 40 per cent. Some authors state that it is almost impossible to estimate the disability in a given case. They recommend that after a competent rhinologist has decided that the olfactory sense has been destroyed, the amount of disability can best be estimated by a jury of men engaged in the same class of work as that of the injured person.

Anosmia and Its Effects on Taste Perceptions.—Crosland, Goodman and Hocket [7] after a very careful

6. Bednar and Langfelder: Ueber das intravenöse (hämatogene) Riechen, Monatschr. f. Ohrenh. **64**: 1133-1139, 1930.

7. Crosland, Goodman and Hockett: Anosmia and Its Effects upon Taste Perceptions, J. Exper. Psychol. **9**: 398-408, 1926.

investigation have concluded that patients suffering with anosmia are not inferior to controls in naming foods placed in their mouths.

Prognosis.—The prognosis of respiratory olfactory disturbances is good when the causative factor can be removed. In the essential anosmias of the peripheral type, especially those of toxic origin or those that follow influenza, some improvement may be expected, but complete restitution cannot be promised. Even the traumatic cases are not hopeless, as some patients recover at least a portion of their olfactory sensation.

Treatment.—In the respiratory and in the toxic essential anosmias, removal of the causative factor is the first indication. For the essential type some authors recommend quinine, strychnine and arsenic. Others recommend the use of a high frequency current of low intensity. One author recommends the use of radium, which he thinks acts as a direct stimulant to the nerve-endings.

QUALITATIVE DISTURBANCES

Cacosmia.—This condition was formerly erroneously called subjective cacosmia. It has been shown by investigators that it is only apparently subjective and that there is really an adequate stimulation in these cases, this being the causative factor, even though in some cases this causative factor cannot be found. The odor is always disagreeable, is due to the decomposition of tissue, such as pus cells, and is usually noticed by the patient on expiration. Its usual sources are tonsil plugs, carious teeth, sinus empyemas, gastric disturbances, obstipation, bronchiectasis and other pulmonary conditions and degenerating syphilitic ulcers in the respiratory tract. Specht [8] referred to a patient who experienced a bad odor which disappeared when an osteomyelitis of the forearm was drained. The causative factor may be difficult to find, owing to the many hidden recesses in the upper respiratory tract.

Parosmia.—Some authors classify as parosmia only those disturbances of smell in which there is a perversion in the perception of smell qualities. Many of the modern investigators of this condition add to the parosmias those cases in which there is a perversion of individual odors, the so-called stable hallucinations. The perverted odors have a strange and usually a disagreeable quality. Parosmia may be of peripheral or central origin and is caused by a lesion in the olfactory sense organ or in the olfactory perceptive nervous system. The presence or absence of a change in the feeling tone for an odor has no significance as far as parosmia is concerned. Parosmia is a condition of considerable importance and may rob a patient of many of the pleasures of life. In some persons it causes malnutrition; in fact, the entire psyche may become unbalanced. Food, clothing, friends and everything with which the patients come in contact may have a vile odor, making life almost unbearable.

Influenza, especially when associated with sinus infections, is the most common etiologic condition in the peripheral type. Parosmia has been caused by the local application of silver nitrate, alcohol and cocaine to the olfactory mucous membrane.

Cases of Peripheral Type: Mackenzie [9] reported the case of a physician to whom violets had the odor of phosphorus; Beyer,[10] a case following influenza in which the patient confused xylene with benzoin and to whom asphalt had a nauseating odor. Cloquet's [11] patient could not perceive vanillin, but was very fond of peruvian heliotrope, which has an odor similar to vanillin. Cloquet also referred to Grundell's case of a priest to whom all odors resembled cabbage or manure.

In the more modern literature, Rollette,[12] who developed a parosmia following the application of alcohol to his olfactory mucous membrane, described his own experiences. These should be read from the original paper. The most important contribution to the literature of parosmia is that of Hofmann.[13] Following an attack of influenza, Hofmann developed an anosmia, complicated by a parosmia. He described in minute detail the result of his experiences with this condition. At first, he could not perceive odors of any kind; gradually some odors became perceptible, after a time the latter were more easily perceived and finally he was able to smell them in their normal intensity. In the beginning these odors were not characteristic of anything that he had ever smelled, but had a woolly, alcoholic or repulsive odor. He stated that he lived in a world of unknown smells. Knowing in advance the name of an odor with which he was about to test himself seemed only to make him more aware how strange the odor he perceived really was. In parosmia, generally speaking, the normal impression of an odor returns in proportion to the increase in the intensity of the odor. All odors do not return at the same time or degree. Patients may never completely recover their sense of smell, or it may take months or years for them to regain it.

Cases of Central Parosmia: The following cases are examples of parosmias which developed subsequent to the use of certain drugs. After taking antipyrine, one patient noticed an odor of cinnamon. Santonin produced a burned odor which lasted for three days in another person; arsphenamine, an odor of roasting coffee in another. All of these were of a temporary nature.

The parosmias of pregnancy quite likely result from the toxemia of this condition. The parosmias that occur during the climacteric period are very likely of the same nature. Robertson [14] reported a case of parosmia which followed a traumatic iritis and choroiditis; he thought it due to an irritation of the olfactory tract.

Parosmia occurs in beginning tabes and in senile anosmia; here the lesion may be found in the olfactory bulb. It may also occur in diseases of the olfactory tract, the gyrus occipitotemporalis and the gyrus hippocampus. Several cases have been reported which followed injuries of the head. Cerebral hemorrhage is also a causative factor.

In a 50 year old patient with marked arteriosclerotic changes, all olfactory stimuli produced the odor of heliotrope.

Lockmann's patient [15] had perversions of smell which were caused by destruction of the olfactory tract by a

8. Specht, in Denker and Kahler: Handbuch der Hals-Nasen-Ohrenheilkunde, Berlin, Julius Springer, 1929, vol. 5, p. 673.
9. Mackenzie: Die Krankheiten des Halses und der Nase, Berlin, 1884, vol. 2, p. 424.
10. Beyer: Beitrag zur Frage der Parosmie, Ztschr. f. Psychol. u. Physiol. d. Sinnesorg. **35**: 50-61, 1904.
11. Cloquet, J. H.: Osphrésiologie, Weimar, 1824, p. 75.
12. Rollette: Beitrag zur Physiologie des Geruchs, Arch. f. d. ges. Physiol. **74**: 383-465, 1899.
13. Hofmann: Zur Theorie des Geruchssins, Sitzungsb. d. Gesellsch. z. Beförd d. ges. Naturw. zu Marburg, 1918, no. 3. Ueber Geruchstörungen nach Katarrhen der Nasenhöhle, München. med. Wchnschr., 1918, pp. 1369-1370.
14. Robertson: Boston M. & S. J., **89**, 1873.
15. Lockmann: Zur Kasuistik der Geruchsanomalien, Ztschr. f. rat. Med., **12**, 1861.

carcinoma. Cullerier and Maignault [16] reported the case of a patient who complained of a constant bad odor, the causative factor being an ossification of the arachnoid membrane.

Treatment.—The older books recommend either a stimulating tonic containing strychnine and arsenic, or the bromides or iodides. Sternberg [17] has successfully treated a number of patients suffering with the peripheral type of parosmia by intravenous injections of an odorous substance. Most of his patients were cured after one or more injections; in others the condition was improved.

Smell Agnosia.—A smell agnosia exists when a patient is able to perceive a given odor, but is unable to recognize it, even though it may be of the most common type and an odor with which at one time he was well acquainted. These persons who are unable to recognize certain odors usually state, "Yes, that is it," when told the name of the odor. Henschen [18] made a thorough study of this condition by making a complete investigation of the nineteen cases seen in his own practice, and also of those cases which had been reported in the literature. His conclusions were in accord with those of Ramon y Cajal and Bechterew, i. e., that agnosias resulted from lesions of the secondary smell centers. In one of Henschen's cases there was an abscess in the second and third temporal convolutions. In another case there was considerable destruction of the gyrus hippocampus. The uncus and portions of the cornu ammonis were not destroyed.

Hallucinations.—Hallucinations of smell are another form of olfactory disturbances. Whereas parosmia is caused by a lesion of the bulb or the olfactory perceptive system, hallucinations and agnosias are supposed to originate in the secondary olfactory centers and especially in the cornu ammonis. Like the parosmias, they are produced without objective stimulation. They are therefore frequently found as a symptom of tumor of the brain, in epilepsy and in the insane. The odorous hallucinations are usually unpleasant, resembling decaying proteins, something burning, or an apothecary shop. Those occurring as a result of the acute intoxications and in hysteria may be of a pleasant nature. Marcus [19] stated that until 1909 only four cases of epilepsy with hallucinations of smell in which complete postmortem examinations had been made were to be found in the literature. The pathologic changes in these cases had a common localization, the lesion being in the region of the cornu ammonis or the hippocampus region of the temporal lobe. Since 1909 many more have been added to this list. There are a number of cases reported in which the patients have suffered with epilepsy and in which extensive lesions of the cornu ammonis were found, but no hallucinations of smell occurred. On the other hand in all cases of epilepsy with smell aura, the cornu ammonis was found involved; whereas, in tumors elsewhere in the brain, no such hallucinations were observed. According to Jelliffe,[20] certain tumors lying on the orbital plate of the sphenoid and compressing the olfactory lobe have seemed to give rise to unilateral or bilateral hallucinations of smell. In certain psychogenic epilepsies the olfactory symbolisms are highly determined; what relationship these have, either as a cause or as a result, to the lesions of the cornu ammonis found in these epileptics has not been determined.

There is not always an objective disturbance of smell in these cases, even when a destructive lesion of the cornu ammonis exists. This is due to the fact that the cornu ammonis is an association center. The primary olfactory center is supposed to be located in the uncus. It is also true that a unilateral lesion of the uncus, or even of the uncus, gyrus hippocampus and cornu ammonis, may not produce a loss of the sense of smell, because of the bilateral innervation of the sense of olfaction. When a loss is present, compensation usually results. There have also been quite a number of hallucinations of smell reported following injury to the brain. Akutzinsky [21] reported a case of epilepsy with olfactory hallucinations associated with an objective disturbance of smell, in which on postmortem examination, a bullet was found in the anterior pole of the gyrus hippocampus and the turning point of the uncus. Hallucinations of smell are frequently observed in mental cases, in the hysterical, or even in persons who are under a severe psychic strain. Specht [8] reported the case of an excited woman who smelled compound solution of cresol on her sick child's breath. A woman in the same neighborhood also smelled the odor. The most minute postmortem examination failed to reveal any compound solution of cresol, the child having died of pneumonia.

Hallucinations of smell and taste are often observed in mental cases, and patients frequently refuse nourishment because of their presence.

A physician must always feel skeptical of patients complaining of hallucinations of smell. The possibility of the presence of any odors must be carefully excluded, especially if the patient has been confined in a hospital where odors may be carried by the hands, hair and clothing. It must be remembered that most of these patients are ill, many with mental disturbances, a condition which makes their observations uncertain. Something may call the attention of these people to the odor of their mouths or bodies, and smells may thus be perceived which were previously unnoticed.

Differential Diagnosis.—When hallucinations occur in mentally sound patients, it is sometimes practically impossible to determine whether one is dealing with an hallucination, a cacosmia, a parosmia, an illusion, a cosensation or synesthesia, or an eidetic image or smell memory. In cacosmia the odor is more or less constant and the causative factor can usually be found in the respiratory tract.

The parosmias are probably to be differentiated from the hallucinations in that the latter are due to irritations in the secondary association centers. The parosmias, in contradistinction, are due to a lesion in the perceptive portion of the olfactory system. Clinically, they can be differentiated only in that the hallucinations come periodically, whereas the parosmias are prolonged over a greater period.

Illusions.—It may be stated that an illusion of smell occurs when an objective stimulation is present which, however, does not produce a normal perception on account of an active psychic imagination producing a false perception. This perception is usually based on a previous experience.

16. Cullerier and Maignault, quoted by Henning: Der Geruch, Leipzig, 1924, p. 346.
17. Sternberg, H.: Monatschr. f. Ohrenh. **65**:171, 1931.
18. Henschen: Ueber die Geruchs- und Geschmachs Zentren, Monatschr. f. Psychiat. u. Neurol., **45**, 1919.
19. Marcus: Epilepsie und Geruchsaura, Ztschr. f. d. ges Neurol. u. Psychiat. **30**: 118, 1915.
20. Jelliffe and White: Diseases of the Nervous System, ed. 3, Philadelphia, Lea & Febiger.
21. Akutzinsky: Monatschr. f. Psychiat. u. Neurol. **57**: 321, 1925.

Carpenter [22] described a case in which a sexton distinctly smelled the odor of decaying flesh while exhuming a body, only to find the coffin empty. In a second case a chemist, after smelling denatured alcohol, again smelled the pyridine base odor with which it was denatured, when he was asked to smell a quantity of pure grain alcohol.

An illusion varies from an hallucination in that the odor perceived is not stable, and if careful inquiry is made, the basis for the illusion can usually be determined.

Synesthesia.—It is a well known fact that in some people a stimulation of one sense organ will produce a sensation from another organ; e. g., stimulation of the sense of hearing may bring about an odor. This may be illustrated by citing the case of a woman, who, on hearing a false note, noticed a bad odor. The sense of smell may also be associated in the same way, the odor of geraniums producing the visualization of a deep red color in one person; garlic, a deep green in another. These are always constant and in this they vary from the eidetic images. They vary from the hallucinations in that they are produced only by objective stimulation.

Jaensch [23] and others investigated the observations made by J. Müller, Goethe, Fechner, Urbantschitsch and others, and came to the conclusion that primitive man experienced not after-images but eidetic images, the difference being in the structure of the images. The structure of the eidetic image is an exact replica of the original, both in plastic form and color, the "I" being on the same plane as the image. These investigators also stated that children between the ages of 6 and 12 have no after-images. With abstract education, or training by the science of words, plus the influence of puberty, a cleavage of the primitive (Einheit's *Form*) results in a transformation of the eidetic images into after-images. This change occurs only in the higher senses. A few people retain the eidetic images even in the higher senses throughout life.

In olfaction and in the sense of taste, eidetic pictures remain and may come to some persons immediately after perceiving an odor. In other cases minutes, hours or even weeks may intervene between the time that the odor was perceived and the image experienced. It may also arise incidentally without apparent cause. The eidetic image may be experienced in conjunction with one or more of the senses, such as sound and vision.

A careful inquiry will usually allow one to differentiate eidetic images from hallucinations.

Ziem [24] pointed out that an incorrect diagnosis of hallucinations may end disastrously. He cited two cases in which patients had been committed to an asylum on account of olfactory hallucinations and had died in this institution. Postmortem examination showed that they both had had badly infected antrums, which were probably the cause of their odor perceptions.

A correct diagnosis of qualitative olfactory disturbances is also essential in that the cacosmias and peripheral parosmias are of a benign nature, whereas the central parosmias and hallucinations usually signify cerebral disease.

22. Carpenter, W. B.: Principles of Mental Physiology, London, C. Kegan Paul & Co., 1881, p. 158.
23. Jaensch: Ztschr. f. Psychol. u. Physiol. d. Sinnesorg., 1920-1923, pp. 84-92.
24. Ziem: Zur Lehre von der Anosmie Parosmie und Parageusie, Monatschr. f. Ohrenh. **38**: 400-406, 1904.

The entire subject is complicated, and the borderline between these different conditions overlaps and at times it becomes impossible to differentiate them.

SUMMARY

1. In patients with olfactory disturbances it is advisable to make tests of the acuity of the sense of smell, nasal taste, nasal tactile sense and the gustatory sense.

2. Careful olfactometric examinations followed, when possible, by accurate postmortem examinations will extend the knowledge of olfaction. The cooperation of surgeons who come in contact with numerous skull fractures should be sought to assist in this problem.

3. The intravenous injection of smell substances appear to be valuable in: (*a*) differentiation between the respiratory and the essential anosmias, and (*b*) the treatment of the peripheral parosmias.

4. Since the cacosmias and the peripheral parosmias are of a benign nature, it is essential that great care be taken in differentiating them from the central parosmias and hallucinations which point toward some serious cerebral disturbance.

ABSTRACT OF DISCUSSION

DR. CLAUDE L. LA RUE, Shreveport, La.: Relatively few patients come to me primarily because of impaired or absent sense of smell. By far the greatest number have infectious diseases, sinusitis, chronic rhinitis or influenza, and seek relief from these conditions, mentioning incidentally the olfactory disturbance. Usually the sense of smell satisfactorily returns as they are cured of the infection. Some have nasal deformity following trauma, so that air cannot enter the respiratory clefts, while the smallest group comprises those with anosmia of central origin—intracranial inflammation, new growths, basal fractures. In these days of compensation insurance, one must not too quickly conclude that a trauma to the nose preceding impaired olfaction is necessarily its cause; neither must one take too seriously the patient who blames a previous nasal or sinus operation for his inability to smell, because usually the disease for which the operation was performed, not the operation itself, is the cause. From the standpoint of localizing intracranial pathologic changes, or even determining their presence, our present tests for olfactory dysfunction are not of great value, being vastly overshadowed by other more important means. From the rhinologist's standpoint, knowledge of the olfactory system and ability to diagnose its lesions at least does much toward restoring a considerable degree of satisfaction and pleasure to those having olfactory dysfunction. Better olfactometric examination on the part of the rhinologist, as advocated by the author, is certainly warranted.

DR. GEORGE B. COLLIER, New Orleans: The olfactory region of the nasal cavity comprises the superior nasal concha and the corresponding part of the septum. The olfactory fibers arise by bipolar cells, form a plexus beneath the mucous membrane and ascend in grooves in the ethmoid bone, passing into the skull by way of the cribriform plate and entering the olfactory bulb, thence to the olfactory area in the brain. These areas, while not as easily localized as the eighth and optic nerve, have not been used as much in the past as they should be by industrial surgeons and others doing surgery of the head and making diagnosis of lesions. Nevertheless, with the better trained brain surgeons and the more scientific rhinologists working in cooperation and spurred on by such papers as Dr. Seydell's, there is no reason why this nerve tract should not be used more and greater importance attached to it, especially in localizing brain tumors and injuries. Gunshot wounds or other penetrating wounds that would sever the bulb would cause complete loss, and any abnormality preventing access of air to the olfactory area will decrease the sense of smell, as septal deflection, hypertrophy of the turbinates, common head colds, and inflammatory diseases. In influenza and other spe-

cific diseases the anosmia may be partially due to a direct toxin. Accessory sinus disease bears a definite relation to smell and quite often is an important symptom. The more one finds in the way of nasal obstruction, the better the chance for recovery. Attention to diseased sinuses gives improvement. In atrophic rhinitis with injury to the nerve endings, little can be expected. The toxic type, if not of too long duration, will improve if the cause is removed.

DR. WILLIAM D. GILL, San Antonio, Texas: In my experience, functional testing of the sense of smell has had its greatest field of usefulness in examination of patients with mental disorders, especially early dementia praecox, as such patients will often admit having an hallucination of smell when other types of hallucination are denied. I have seen the practical application of these tests in the examination of recruits for military service, and they are also of value in the examination of prospective employees in the industrial field, as they frequently protect against employees with incipient mental disorders and often forestall insurance claims in malingerers complaining of the loss of smell. The latter point is especially important in chemical industries. Another point that may be mentioned is that examination of a patient with a suspected brain lesions, such as tumor or abscess, is not complete until the sense of smell has been tested qualitatively. Lesions of the base of the brain in the frontal and prefrontal regions, and of the uncinate gyrus, are the locations in which lesions most frequently produce disturbance of smell. In cerebral localization other substantiating neurologic tests should be employed, such as estimation of the visual fields. Little information can be gained by testing the olfactory sense in acute brain injuries, the reason being that the critical condition of most of these patients precludes their cooperating with the examiner. Sharpe's book on brain injuries has nothing in the index regarding disorders of olfaction in acute brain injury. To the neuropsychiatrist functional testing of the sense of smell has its greatest practical application, but to the otolaryngologist such tests are equally important and demand just as serious consideration. It may be well to sound a warning note at this point against destructive nasal surgery, as many of the patients subjected to radical operation complain of loss of smell after such procedures. Profit can be gained by paying serious attention to the principles of ethmoidal surgery as outlined by Pratt of Minneapolis. Much of the joy of living is lost by patients who are deprived of the sense of smell by too radical intranasal surgery, as the impairment or loss of the sense of smell and sense of taste makes such patients quite unhappy.

DR. ERNEST M. SEYDELL, Wichita, Kan.: There can be no progress in olfaction until rhinologists make olfactometric examinations on patients suffering with olfactory disturbances and report those cases which present instructive factors.

Primary Lesion in Hepatic Cirrhosis.—I believe that the primary lesion in cirrhosis is one which depends on slow progression but frequent repetition. It consists, first, in degeneration or destruction of liver cells, followed by regeneration and replacement by new liver cells, but with some overgrowth of fibrous tissue in the areas which are destroyed. The essence of this view is the conception that the damage in the liver is one which is focal, but frequently repeated. Areas of liver cells die, and are replaced by new areas built up from surviving cells; these new areas are again destroyed, and again rebuilt, but increase of fibrous tissue gradually supervenes as the process of death and repair is repeatedly carried out. Finally, on this view, an entirely new liver parenchyma, containing perhaps not a trace of the old and original liver, is built up on a plan which has the appearance we describe as cirrhosis. Not only has the entire parenchyma been repeatedly destroyed and renewed, but, as is well known from the work of many pathologists, new bile ducts are made and joined up in functional relation with the new glandular cells. Even the blood vessels and their branches —both of the hepatic artery and of the portal vein—are involved and the whole circulatory plan in the liver is markedly altered. —McNee, J. W.: Croonian Lectures on Liver and Spleen: Their Clinical and Pathological Associations, *Brit. M. J.* **1**:1111 (June 18) 1932.

A CONTRIBUTION TO THE STUDY OF SO-CALLED LIVER DEATH

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So-called liver death has been the subject of considerable discussion in recent publications, and numerous observations have been made regarding the clinical course and possible etiology of these unfortunate disasters, which all too frequently follow surgical procedures on the gallbladder and bile tract.

In a recent study of several postoperative deaths in patients suffering from gallbladder disease and coincident hepatic damage of long standing, we[1] were struck by a peculiar and constant chain of symptoms and necropsy observations which suggested a pathogenesis for this rather obscure type of liver death.

The first case we[2] observed was one of traumatic pulpification of the liver in a boy, aged 16 years, who died eleven days after an accident. The most striking clinical manifestations were oliguria (which progressed to anuria) and uremia associated with hemorrhages from all mucous surfaces. The symptoms were accompanied by a marked retention of blood nitrogen. At necropsy the most striking finding, aside from the pulpified liver, was a high grade nephrosis. After considerable study of this case, we assumed that the nephrosis was produced by some toxic product elaborated by the pulpified liver which had some specific deleterious effect on the kidneys. Subsequently we observed four patients who died following cholecystectomy in whom the clinical course was similar to that of the patient who died following the liver trauma. In another instance we studied a patient who died in a state of coma with clinical manifestations closely paralleling those seen in the foregoing five cases. The latter patient was a woman, aged 39, who had a diffuse metastatic carcinoma of the liver secondary to a carcinoma of the breast (removed eleven weeks previously). Necropsy revealed marked degenerative lesions in both kidneys.

In none of these patients could any infection be demonstrated, and all showed marked changes in both the liver and the kidneys.

THE HEPATORENAL SYNDROME

The clinical and necropsy observations were unusually interesting and fairly constant. With the exception of the first and last case mentioned, all gave a history of long standing gallbladder disease. In all cases, careful preoperative blood and urine studies presented normal conditions. On about the fifth or the sixth postoperative day the patients developed a rise in temperature and pulse rate, accompanied by abdominal distention and a progressive oliguria with the appearance of albumin, casts and often red cells in the urine. With the increase in oliguria, the patients lapsed into delirium and then coma, the nitrogenous elements of the blood increased progressively and the urinary nitrogen became greatly diminished. Nausea and vomiting were

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1. Helwig, F. C., and Schutz, C. B.: A Liver Kidney Syndrome: Clinical, Pathologic and Experimental Studies, Surg., Gynec. & Obst., to be published.

2. Helwig, F. C., and Orr, T. G.: Traumatic Necrosis of the Liver with Extensive Retention of Creatinine and High Grade Nephrosis, Arch. Surg. **24**: 136-144 (Jan.) 1932.

often severe, and mucous surface bleeding frequently became a prominent feature in the clinical picture. In the latter part of the illness, blood often in large amounts was found in the stools and the vomitus. The clinical picture then progressed to that of uremia with generalized low grade edema and almost total anuria. The blood nitrogenous elements continued to increase and the patients died in a state clinically resembling uremia.

The conditions found at necropsy were relatively uniform. Low grade generalized edema was almost always present and the operative wounds showed little or no healing. The gastro-intestinal tract contained blood in large amounts, which apparently originated from submucous hemorrhages. Not infrequently hemorrhages were found in the mucous membranes of the mouth, respiratory tract and kidney pelves. The liver and kidneys were always the seat of striking degenerative changes. In the former, either leukocytic infiltrations, necrosis and interstitial hemorrhages, or marked parenchymatous and fatty changes were present. The most advanced lesions were seen in the liver tissue about the gallbladder fossa in these operative cases. The kidneys always presented a marked nephrosis. Parenchymatous swelling and loss of normal markings were the outstanding gross observations, while, microscopically, tubular epithelial degeneration progressing to actual necrosis was almost constantly observed. Patchy focal hemorrhages and areas of leukocytic infiltration were the rule, while the glomerular changes were not noteworthy.

CLASSIFICATION

In a large series of so-called liver deaths recently analyzed by Heyd,[3] wherein the death could not be ascribed to the usual types of mortality, he has classified the deaths into three groups, as follows:

Group 1. "Hepatic exhaustion," which he thinks is due possibly to decreased chemical activity of the liver resulting in an alkalosis which causes death. The mechanism of this condition is still quite obscure.

Group 2. The jaundiced patient who has had a rather satisfactory postoperative course for a few days when a distinct change in the character of the bile drainage occurs; it becomes thin, watery and decreased in amount. The patient becomes delirious, lapses into coma, and dies. In these instances, Heyd thinks that the sudden release of the obstruction (the majority are common duct operations) may result in an acute secondary hyperemia of the liver with resultant failure of liver function.

Group 3. The nonjaundiced patient with pancreatitis and common duct disease who, following a drainage of the common duct, does well for twenty-four hours and then goes into a state of shock with cessation of urinary secretion. This is brought about, he thinks, as a result of overwhelming intoxication of pancreatic origin.

Unfortunately, no necropsy studies were recorded and very few substantial facts relating to the actual mechanism of these clinical manifestations are brought forward to account for them. Therefore, we wish either to amend certain phases of this classification or at least to contribute some additional data to the study of this distressing problem.

In our cases only two showed any evidence of jaundice, and in one of these it was very faint. In neither instance did we consider the jaundice of any importance in the causation of the kidney damage, as no obstructive lesions were present and the kidneys did not show the microscopic picture of bile nephrosis. The jaundiced patient presents a characteristic train of symptoms, which have been well summed up by Walters[4] and again by Heyd. This type of case is referred to in group 2 by Heyd in the foregoing discussion. In groups 1 and 3 in his series there was no jaundice and in group 3 he considered the condition due to pancreatitis resulting from common duct obstruction and he felt that some toxin was elaborated by the diseased pancreas which caused the clinical syndrome he has outlined. Therefore, we feel that group 1 of Heyd's series, which he ascribes to "hepatic exhaustion," would more nearly compare to the cases we have observed.

COMMENT

In all instances in which gallbladder disease was the reason for surgical intervention, we obtained a history of long standing cholecystitis and, at both the operation and the necropsy, liver damage of considerable duration was encountered. We feel that the deaths which ensued in these individuals were not the result of cessation of liver function since there was apparently no impairment in glycogenesis, as evidenced by blood sugar determinations, nor was there any evidence of failure to deamidize the amino-acids, since urea formation was unhampered and progressive increase in the nitrogenous products in the blood was found in every case. In all of our patients, the stools contained bile, and no other evidence of any lack of hepatic function was found. Unfortunately, we did not carry out any tests for impairment of fibrogen production.

MECHANISM

The mechanism responsible for the kidney damage is, of course, obscure. All our patients died in a state clinically resembling uremia and in not a single instance was there any evidence of previous kidney damage. Therefore, we concluded that the damage to the kidney must have been brought about by some toxin elaborated by the diseased liver which acted more or less specifically on the kidneys. It will be observed in the summary of the necropsy observations that none of the other parenchymatous organs showed any evidence of profound alteration such as was encountered in the kidneys. Hemorrhages were almost always present and they were seen most frequently in the gastro-intestinal tract, although they were not infrequently encountered elsewhere. Similar hemorrhages have also been observed by LeNoir[5] after operation for gastric ulcer. The patients in his series vomited large quantities of blood, and at necropsy the gastric ulcer was shriveled and no eroded vessel was seen. However, a severe hepatonephritis was uniformly present and the patients died in a state of uremia. The liver and kidneys both showed marked damage. Walters and Parham[6] have observed uremia and gastro-intestinal hemorrhages in patients who died following operation for obstructive jaundice, and Zaffagnini[7] saw hematuria in patients with gallstones. Hemorrhages from the gums was seen by Thiers[8] in a fatal case of apiol poisoning with

3. Heyd, C. G.: "Liver Deaths" in Surgery of Gallbladder, J. A. M. A. **97**: 1847-1848 (Dec. 19) 1931.

4. Walters, Waltman: Obstructive Jaundice: Physiologic and Surgical Aspects, Pub. of Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota.

5. LeNoir, P.; Richet, C., Jr., and Jacquelin, A.: Ann. de méd. **9**: 225 (April) 1921.

6. Walters, Waltman, and Parham, D.: Renal and Hepatic Insufficiency in Obstructive Jaundice, Surg., Gynec. & Obst. **35**: 605-609 (Nov.) 1922.

7. Zaffagnini, A.: Arch. ital. di urol. **4**: 161 (Dec.) 1927.

8. Thiers, H.: Fatal Hepatonephritis, Compt. rend. Soc. de biol. **106**: 303-304 (Feb. 6) 1931.

uremia and severe liver damage, while Gundermann [9] experimentally produced uremia with blood in the urine and the gastro-intestinal tract by ligation of the hepatic artery. This procedure produced atrophy and degeneration of the liver. Moreover, by injecting liver cells intravenously he was able to produce a hemorrhagic diathesis with bleeding into the gastro-intestinal tract.

The explanations that have been advanced for the hemorrhagic phenomena have been ascribed to either impairment in fibrinogen formation or increase in bile salts in the blood. However, in the absence of jaundice and with no other evidence of impaired liver function in our cases, we feel sure that these two factors are highly speculative and relatively unimportant if not incorrect. Recently, White and Jankelson [10] noted severe hemorrhage from the gastro-intestinal tract in a group of cases of gallbladder disease in which jaundice was an unimportant factor, and they considered that a hepatitis associated with the diseased gallbladder elaborated a toxin into the blood which caused surface bleeding of the gastro-intestinal mucus.

Experimental studies have been carried out in animals by two of us [1] in an attempt to produce a secondary kidney injury. Through mechanical trauma to the liver, as well as by ligation of the hepatic artery, we induced hemorrhagic necrosis in the livers of dogs and rabbits, which was soon followed by degenerative changes in the kidneys. A striking rise in the nitrogenous products of the blood was seen, while a marked oliguria resulted, and the urine contained red cells, albumin and casts. If the animals were killed while the blood and urinary changes were most striking, lesions similar to those seen in our patients were observed. These experiments likewise suggested an elaboration of some toxin from the liver which acted more or less specifically on the kidneys.

TREATMENT

A careful analysis of these cases of liver death suggest that the primary factor in the syndrome is due to a diseased liver. In this type of death which we are reporting, the kidney damage resulting in uremia is probably brought on by toxic products elaborated in the liver, acting secondarily on the kidney. Unfortunately, it is difficult if not impossible to estimate the degree of liver damage which is present prior to operation, since it is rather definitely demonstrated that the liver function, so far as its physiologic activity is concerned, is not disturbed. Maintenance of sugar level, deaminization and bile production are all unaltered. And our experiences with function tests, which crudely estimate the ability of the liver as an excretory organ, have not been particularly promising. However, recently Graham [11] and Cole, by the use of iso-iodeikon (phentetiothalein sodium-N. N. R.) in doses of 2.5 Gm. to the average adult, have obtained such encouraging results that now they refuse to operate on patients with a high dye retention. It has been our rule since studying these cases in our series to supply the liver with glycogen by large amounts of sugar preoperatively which can be given by mouth or intravenously, since it has been shown by Bollman [12] that the detoxifying action of the liver is greatly increased when the hepatic parenchymatous cells have a generous glycogen storage.

Dr. Frank Mann [13] of the Mayo Clinic suggested the possibility that suturing of the liver around the hepatic fossa might cause sufficient hemorrhage and death of liver cells to produce toxic products, and this assumption seems quite reasonable in view of the fact that the most profound changes of both an acute and a chronic nature were found in the liver parenchyma in this region. Furthermore, the necropsies strongly suggest that dead liver tissue may be one of the possible sources of the toxin, since in our cases intrahepatic hemorrhages with necrotic liver cell foci were so often found. Hence, it might be inadvisable to suture the liver after cholecystectomy.

In dogs, Lamson, Minot and Robbins [14] observed a marked acceleration in hepatic repair after poisoning with carbon tetrachloride when the animals were given small amounts of calcium chloride, and Graham [11] has instituted the use of calciums in his postoperative gallbladder cases with happy results. After so-called hepatic coma has set in, the treatment is very difficult. Snell [15] mentions that in Morawitz's clinic lactic acid is used intravenously and this alone or in combination with dextrose apparently produces temporary improvement in hepatic function in these terminal states.

SUMMARY

From the foregoing observations, we feel that there is a definite type of so-called liver death which is due to some toxin elaborated in a diseased liver, which toxin acts directly on the kidneys, producing a profound degenerative change in those organs. We have observed a certain fairly definite clinical and pathologic syndrome which was seen in one case of traumatic liver pulpification, one of diffuse carcinomatous metastases in the liver, and four of long standing cholecystitis with a concomitant high grade hepatitis. All these patients died in a clinical state resembling uremia, and all showed extensive degenerative lesions in the kidneys. The blood and urinary studies were substantiated by the changes found in the kidneys. Hemorrhages from the mucous surfaces were present in four cases and their origin has not been explained.

This type of death resembles more closely the so-called hepatic exhaustion as outlined by Heyd [3] and should be differentiated from the deaths occurring after operation on the bile ducts when the patient is jaundiced, since jaundice was present in only one case in our series and even in this instance no change in the character of the bile drainage was ever observed.

CONCLUSIONS

The clinical behavior in this group of cases and their similarity at necropsy have led us to assume that liver damage, whether traumatic or infectious in origin, produces a selective toxin which may severely damage the kidneys.

In view of the fact that this syndrome has always followed damage to the liver and has occurred in individuals with previously normal kidneys (as regards known tests for kidney function), we believe that the pathologic changes in the kidney are secondary to the changes in the liver. Since jaundice is not a feature of the syndrome and since liver function is not, so far as we can determine, notably decreased, we believe that

9. Gundermann, W.: München. med. Wchnschr. **60**: 2332-2333 (Oct.) 1913.
10. White, F. W., and Jankelson, I. R.: New England J. Med. **205**: 793-797 (Oct. 22) 1931.
11. Graham, E. A.: Illinois M. J. **63**: 196 (Sept) 1931.
12. Bollman, J. L.: Proc. Staff Meet., Mayo Clin. **4**: 369 (Dec. 18) 1929.
13. Mann, F. C.: Personal communication to the authors.
14. Lamson, P. D.; Minot, A. S., and Robbins, B. H.: The Prevention and Treatment of Carbon Tetrochloride Intoxication, J. A. M. A. **90**: 345 (Feb. 4) 1928.
15. Snell, A. M.: Diseases of the Liver as Observed in European Clinics, Proc. Staff Meet. Mayo Clin. **6**: 405 (July 8) 1931.

the toxin has its origin in a by-product of liver cell destruction.

There can be little doubt that the clinical manifestations represent a definite syndrome of particular importance in gallbladder surgery. The problem of its etiology and the exact nature of its toxin requires a continuation of the experimental studies which two of us (C. B. S. and F. C. H.) are conducting.

Until more definite information regarding its etiology is obtained, the treatment of this condition must necessarily be empirical. It seems certain that the syndrome is most frequently the result of surgical delay. It therefore follows that the most important part of the treatment, for the purpose of preventing its occurrence, is preoperative. Its recognition tends to substantiate the growing surgical opinion that definite cholecystitis should not be subject to prolonged medical treatment. Preoperative liver function tests may be valuable in determining the degree of liver damage.

The use of dextrose both preoperatively and postoperatively has been the most successful form of direct treatment in our experience. The use of calcium postoperatively, as suggested by Graham, may be of value.

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HYPERTHYROIDISM IN CHILDREN

A REVIEW OF FIFTY-SEVEN CASES

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CLEVELAND

During the past few years, my associates and I have seen at the Cleveland Clinic a number of cases of hyperthyroidism in children. Although formerly it was thought that hyperthyroidism in children under 14 years of age occurred but rarely, our experience has led us to believe that this disease is not as uncommon as is generally supposed.

It is not within the province of this paper to review the various theories and hypotheses regarding the etiology of hyperthyroidism that have been presented, nor to review the bibliography that was so adequately covered by Helmholz[1] at the meeting of this association at Dallas, Texas, in 1926.

Means,[2] however, has discussed the two most prevalent views of Marine and of Plummer adequately and briefly, and has made the following pertinent statement: "It is evident that no one knows the primary cause of hyperthyroidism although there are those who believe that the thyroid is guilty of any one of the following disorders, or of both of the latter two: hypofunction, dysfunction and hyperfunction." In studying a group of children, however, it is especially interesting to consider the possible contributing factors in the production of the disease.

In reviewing the histories of a group of children, the possibility that there has been an hereditary factor occasionally presents itself. Dr. Crile operated on one such patient with marked hyperthyroidism, a child aged 14, on whose mother and maternal grandmother he had also operated for the same disease. I once operated on a Jewish boy of 14 who showed all the typical signs of hyperthyroidism. This lad had a brother two years younger in whom hyperthyroidism developed at exactly the same age. In three other cases, the mothers of children with hyperthyroidism had had the disease, and in one case, that of a boy, the father also had hyperthyroidism and was operated on later. In one case a mother's brother and in another the sister of the mother had hyperthyroidism.

The so-called constitutional factor is probably not important in this group of children, because in nearly every instance the child was said to be perfectly well until the onset of the disease. In certain cases, however, the statement has been made by the parents that the child had always been of a nervous temperament.

The racial factor is about the same as in adults. In our series of cases, the majority of the children were American born, of mixed parentage. I have seen the condition in an Italian child of 8 years. Seven cases occurred in Jewish children. I have seen only one case in a Negro child and only one in which the parents were Scandinavians.

In a few of the cases, the disease followed an infection, and in the case of one child who had had scarlet fever, followed by severe pyelitis for eight months, hyperthyroidism developed with an abrupt onset and a rapidly developing clinical course. In one case, the disease followed an attack of whooping cough. In another case, the patient's parents were quite insistent that the disease followed tonsillectomy, and in still another, in a patient who had had thyroid enlargement previously, the symptoms developed after an injury to the knee.

In one very severe case of exophthalmic goiter, the child also had a spastic paraplegia from a birth hemorrhage. In only one case was there an accompanying endocrine disorder. This girl presented all the symptoms of true hyperthyroidism, together with evidence of accompanying hypopituitarism. She had a very fine, soft skin, typical hyperplasia, hypertrophy of the breasts and a tendency to be overweight.

Fig. 1.—The patient at the age of 9 years. The picture on the right shows her two months after thyroidectomy.

I have never been able to come to the conclusion that the administration of iodine as a preventive measure is a factor in the production of hyperthyroidism in children. Personally, I do not believe that iodine medication has either produced or lessened the incidence of the disease in children.

Geographically, our cases have come, for the most part, from the area about Cleveland, Pennsylvania and western New York, although three were from Indiana, three from Michigan and single cases from West Virginia, Illinois, Louisiana, Wisconsin and Wyoming.

Most of Helmholz's cases came from Minnesota, Iowa, Illinois and Wisconsin, the remainder coming from scattered localities in other states and in Canada.

In studying the onset of symptoms, I find that it is difficult to give absolute statistics, owing to the confused statements made by the parents.

From the Cleveland Clinic.
Read before the Section on Surgery, General and Abdominal, at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.
Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of some of the illustrations. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Helmholz, Henry F.: Exophthalmic Goiter in Childhood, J. A. M. A. **87**: 157-163 (July 17) 1926.
2. Means, J. H., and Richardson, E. P.: Diagnosis and Treatment of Diseases of the Thyroid, in Christian, H. A., and Mackenzie, James: Oxford Medicine, London, Oxford University Press, 1920, vol. 6.

In 70 per cent of our cases, either nervousness or enlargement of the gland was the first symptom noted by the parents. The incidence of these two symptoms as the initial one is about the same, that is, 35 per cent. Often, the parent was unable to state whether the fulness of the neck or the nervousness appeared first. In seven of the cases, it was stated that the enlargement

Fig. 2.—The patient at the age of 10 years. The picture on the right shows her one week after a second lobectomy.

of the neck and the nervousness appeared at the same time. In only one case was exophthalmos noted as the first symptom, although in two other cases its onset was noted at the same time as that of the enlargement of the gland. In four cases, tachycardia was noted as the primary symptom, and in two, the first symptom that attracted the attention of the parents was shortness of breath on slight exertion. Loss of weight was the primary symptom in one case. In one, in which the disease followed whooping cough, the parents insisted that all the symptoms and other signs, nervousness, enlargement of the neck, exophthalmos and tachycardia, appeared at the same time.

Owing to the inaccuracies just mentioned, I am coming more and more to the belief that exact statistics concerning the sequence of symptoms will be fairly difficult to obtain. In general, however, it may be stated that enlargement of the gland and nervousness usually appear first, followed by tachycardia and exophthalmos. One child 4 years of age had had a rapid heart for a year before enlargement of the gland and exophthalmos were apparent.

The diagnosis of hyperthyroidism in a child is not difficult in most instances; as a matter of fact, these patients frequently come to us with the diagnosis already made, and in the typical case, even the casual observer can identify the disease. It is not within the scope of this paper to offer a detailed description of the typical symptoms presented by these children; among the most common symptoms are tachycardia, exophthalmos, enlargement of the thyroid gland, extreme nervousness, easy excitability, great irritability and the tendency to cry over the most trivial circumstances. In reviewing the symptoms presented by this group of patients as given in the accompanying table, I have found that they conform closely to those listed by Helmholz. A comparison of the frequency of these symptoms in our series with those of Helmholz is interesting.

Tachycardia was present in every case. The average pulse rate was 129, but varied from 100 to 180. Nervousness and enlargement of the thyroid were present in nearly every case. It is interesting to note that the incidence of bruit in our cases is much lower than that cited by Helmholz. I attribute this relative absence of bruit to the fact that most of these children had taken iodine, some of them for a fairly long time, and the gland had become involuted and very firm.

Comparison of Frequency of Symptoms in Helmholz's Cases and Those in Cases from the Cleveland Clinic

	Helmholz, 40 Cases	Cleveland Clinic, 57 Cases
Tachycardia	100%	100%
Nervousness	93%	91%
Thyroid enlargement	93%	93%
Exophthalmos	83%	76%
Bruit	70%	49%
Hyperhidrosis	67%	55%
Tremor	57%	66%
Loss of weight	53%	50%
Polyphagia	50%	40%
Weakness in quadriceps	47%	....
General weakness	....	58%
Gastro-intestinal symptoms	47%	43%
Dyspnea	40%	55%

In approximately two thirds of these cases, tremor had been a definite symptom, but the slight tremor some of the children have may be misinterpreted. Especially is this true in some of the borderline cases in which the tremor of a residual chorea must be ruled out.

In about half of the cases there had been loss of weight, in some instances amounting to as much as 20 pounds (9 Kg.). The weakness of which the patients complain is often a noticeable symptom, and in some cases myasthenia is marked. Helmholz has called especial attention to the presence of a weakness of the quadriceps femoris in these children. If a child with exophthalmic goiter is asked to step up onto a chair, he must get a start and steps up with a quick effort, while the average child steps up without effort and raises himself slowly. The other symptoms of hyperthyroidism in children are the same as in adults and need no comment.

Fig. 5.—The patient at the age of 18. She was operated on at the age of 13 for exophthalmic goiter.

The symptoms may have been present from a few weeks to several years. In some cases in which the disease has persisted for a long time, it may be difficult to get an accurate history of the onset from the parents. Thus, in one instance, it was stated by the parents that all symptoms started abruptly and appeared within a fourteen day period. In 65 per cent of our cases, the disease appeared between the ages of 12 and 14 years;

in the other 35 per cent, it developed between the ages of 4 and 10 years. In one case, that of a child 4 years of age, there was a perfectly definite history that the disease had been present since the age of 2 years; the attending physician's clinical history forwarded with the patient verified this statement.

Our experience with estimations of the basal metabolism in children with hyperthyroidism has been generally unsatisfactory. In the first place, it is difficult to know that a child is in a true basal condition; secondly, there are such variations in the estimations of the basal metabolism determined by different standards that it usually appears that the standards available are not sufficiently accurate. Our tests have shown wide variation, especially from the initial reading. At the present time, we are taking repeated estimations with the patient in the hospital, by the Harris-Benedict standards for girls under 12 years of age and the Benedict-Talbot standard for boys under 14 years of age. An estimation is also made in each case by the Du Bois standards. We have not used the estimation of basal metabolism as an index for operability, and the clinical findings usually make the diagnosis obvious.

Formerly it was the practice to perform ligations in these cases and to send the child home for a period of three months, but in our latest series it has been possible to do lobectomy or thyroidectomy in practically every case. It must be remembered that for some reason the improvement that follows ligation is very definite. I have always felt that in children this improvement is greater than that seen in the average adult. Therefore, this procedure should not be discarded in favor of lobectomy if there is any doubt as to the wisdom of the latter as the primary operation.

We have now operated on forty-three patients with hyperthyroidism, with two deaths, one of which occurred before the advent of compound solution of iodine. The results of surgical intervention in this group of patients have been most gratifying, and we think that it is the method of choice for their treatment. The preparation of these patients for operation is a distinct problem and requires a great deal of time and patience on the part of the hospital staff, and especially of the anesthetist. As would be expected, the children are extremely excitable and do not take general inhalation anesthesia well. They are likely to have rather severe reactions after deep anesthesia, even though they have been carefully prepared for it, and for this reason local anesthesia and light nitrous oxide analgesia are used. The children are apprehensive, and their confidence and cooperation must be obtained. The anesthetist, who must be some one who is particularly interested in children, spends much time with each child before the operation and becomes his chum and boon companion. The child is made familiar with the anesthetic mask and is put under light inhalation anesthesia; as the result of this preparation, most of the children have behaved extremely well while the operation was being done.

Prioleau [3] has described in detail the routine that we use and has especially emphasized the fact that the child's fear of a surgical procedure in many instances is the unfortunate result of inadvertent statements about operations made in his presence by the parents.

The technical problems are the same as those encountered in adults, except that even greater care must be taken to leave enough tissue for the normal needs of a child. It must be remembered that hypothyroidism is likely to develop in these patients. A fairly marked reaction often occurs after operation; that is, all the symptoms are intensified, and it is interesting to note that often these children do not appear to be as ill as the chart would indicate. Marked tachycardia will develop along with a high temperature and flushing, but still the child does not complain, and is bright and alert and able to take fluids without difficulty. The immediate recovery from the operation is often astonishingly rapid, and when the patient is seen at the end of a few weeks, practically all of the symptoms will have disappeared.

Although these children usually leave the hospital with a small, hair-line scar that can hardly be seen, within a few weeks the scar becomes red and tender and a thick keloid develops. The incidence of keloid formation is very high in these cases. In the past three years, I have seen only one child in whom a keloid did not develop in the scar. This condition is best treated with grenz rays, which give satisfactory end-results. I think the general statement may safely be made that, the older the patient with hyperthyroidism, the better is the operative scar.

We are frequently questioned concerning the ultimate outcome of these children after operation. I have followed some of them through their high school and college days, and so far as I can tell they are perfectly normal in every respect, except that in an occasional case slight transient hypothyroidism may develop from time to time.

3. Prioleau, W. H.: Anesthesia for Thyroidectomy in Children, Am. J. Surg. 7: 55-56 (July) 1929.

THE SURGICAL TREATMENT OF PROGRESSIVE EXOPHTHALMOS FOLLOWING THYROIDECTOMY

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AND
O. W. JONES, JR., M.D.
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Exophthalmos as a sign of hyperplastic disease of the thyroid gland has been attributed to overactivity of certain smooth muscles in the orbit, innervated by the sympathetic nervous system, and to an increase of orbital fat. However, more attention has been given to the description of ocular signs, to which the names of some thirty or more persons are attached, than to a detailed study of exophthalmos with proof of the mechanism by which it is produced. It is rather astounding to find so little in the literature that would indicate that the orbital contents have been studied in persons dying from disorders of the thyroid gland. In view of the fact that exophthalmos is an obvious physical sign, readily apparent both to the physician and to the layman, it is surprising that nothing has been accomplished in the determination of the pathologic changes that produce it.

The result of surgical treatment for disease of the thyroid gland usually is gratifying to the patient and satisfactory to the surgeon. Occasionally so advanced a stage of the disease is reached that permanent damage already has occurred. In these patients the surgical risks are greater and restoration to health is incom-

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plete. As a rule, exophthalmos recedes as other findings and physical signs abate after a thyroidectomy, but it is a matter of common observation that such regression does not follow always and that certain persons show a persistent, stationary exophthalmos. There is still a third group of patients in whom exophthalmos after thyroidectomy neither has receded nor become stationary, but actually has progressed. Though these cases are, fortunately, not very frequent, the literature, especially the ophthalmologic literature, contains many examples of this type.

The usual history of these persons is that the exophthalmos progresses until the lids no longer can cover the globes; and that, at about this time, certain other signs appear. The lids become extremely puffy, the scleral conjunctiva edematous and the movements of the

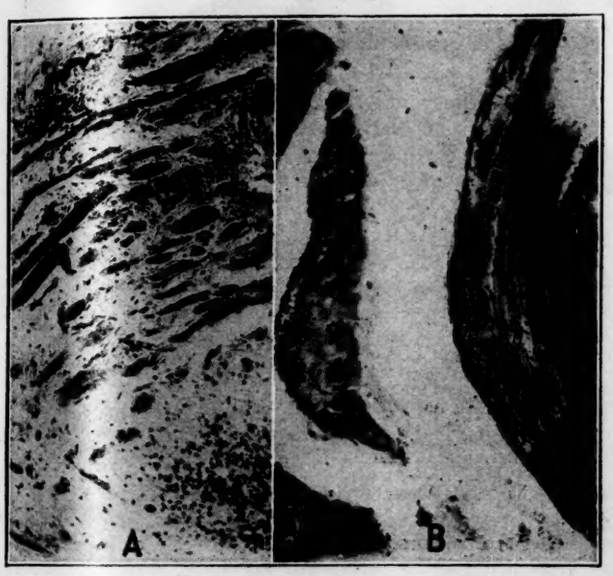

Fig. 1.—Photomicrograph of extra-ocular muscles: *B*, normal muscle; *A*, muscle taken from a patient with progressive exophthalmos, showing round cell infiltration, increased fibrous tissue, fragmentation and separation of muscle fibers.

globe restricted. Lacrimation and epiphora appear. A little later the conjunctival mucosa is engorged and protrudes between the lids. A stage soon is reached in which, from lack of protection, the cornea becomes dry, inflamed, ulcerated, then infected, and ophthalmitis follows. Enucleation becomes necessary, or death ensues. With the progressive exophthalmos, the limitation of movements of the eye muscles and the changes noted in the lids, there occurs, in some, a progressive blindness resulting from changes in the optic nerve. Partial or complete loss of vision may occur either from the changes in the cornea or in the optic nerve, or both.

Our attention was directed first toward the subject by a patient who presented all of these features—progressive exophthalmos after thyroidectomy, with extreme limitation of the movements of the eye muscles, swelling of the optic disks which had progressed to the stage of well advanced atrophy, and vision reduced to the recognition of gross objects at a distance of a few feet. Since that time others have been under our care, and this report presents the method of operative treatment. Incidentally, our studies have revealed the pathologic change responsible for this hitherto little understood condition. It affords a field for investigation of the factors concerned in the production of intrinsic changes in the extra-ocular muscles and in the optic nerve as well. Here it may suffice to say that progressive exophthalmos following thyroidectomy is of mechanical origin and is the result of a pronounced swelling of the extra-ocular muscles. Grossly, the

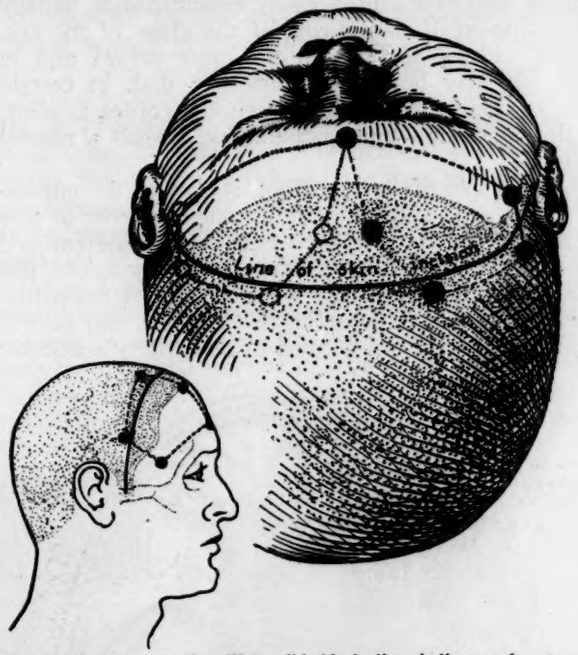

Fig. 2.—Incisions used. The solid black line indicates the coronal incision; the dotted lines, the two osteoplastic flaps.

Fig. 3.—Intracranial approach to the orbit. Part of the orbital plate is removed, exposing the fascia of the orbit.

muscles are from three to eight times their normal size. Microscopic study shows edema, round cell infiltration—often in a perivascular pattern—loss of muscle architecture, increase of fibrous tissue with areas of hyalinization, and fragmentation and destruction of muscle fibers (fig. 1).

The operative treatment here outlined is not intended as a cosmetic operation, nor is it advised for those persons who have simply a persistent, stationary exophthalmos following thyroidectomy. This procedure is for those who have a progressive exophthalmos, usually with limitation of movements of the globe of the eye, with or without changes in the optic nerves and in vision. It may be pointed out here that, in certain instances, vision fails even though the cornea is clear, and the ophthalmoscopic examination reveals a normal fundus.

The principle of the operation is that of decompression of the orbit and the optic foramen in order to give adequate space for the increased orbital content and the constricted optic nerve. One well may ask at this stage, "Is such a procedure sufficient to halt the pathologic process that is occurring?" We only can answer that, up to date, it has seemed to be entirely adequate;

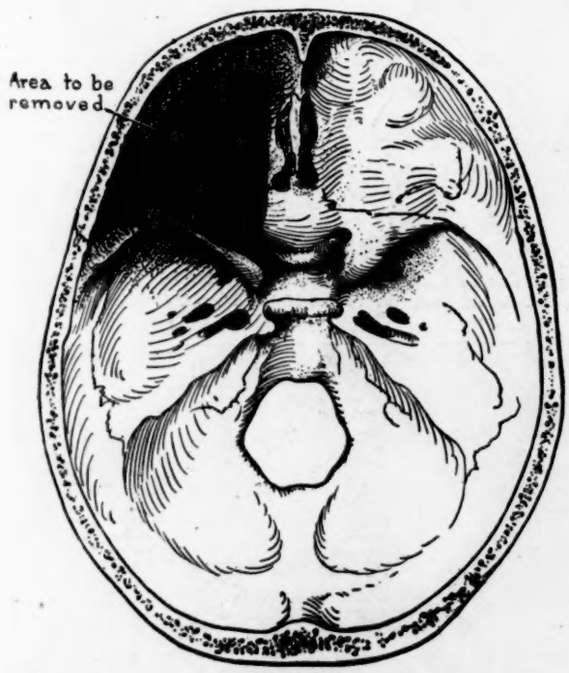

Fig. 4.—The base of the skull, showing the area of bone removed from the orbital plate and from the optic canal.

in our patients there has been no recurrence, in all of them vision has been restored and there has been recession of the exophthalmos.

TECHNIC

The surgical procedure consists of reflecting bilateral frontal flaps, elevating the dura of the frontal lobe, unroofing the orbit and removing the upper portion of the optic foramen. The orbital fascia and the ring of Zinn are opened widely. As a preliminary to operation, roentgen studies are made to inform us of the height and extent of the frontal sinuses and the projection of the ethmoid and frontal sinuses into the orbital plate. Views of the optic foramina reveal the immediate relationship of the sphenoid sinus to it so that the operation may be conducted in such a way as not to open these cells.

The anesthetic is a matter of choice for the individual surgeon. In each instance we used a preliminary hypodermic of morphine, followed by avertin, usually 85 mg. per kilogram of body weight, with 0.5 per cent procaine hydrochloride for local anesthesia. In all but one instance this decompressive operation was completed on both orbits at one stage; on our first patient, two operations were performed.

We expose the frontal bone by a transverse incision from the temporal fossa on one side, across the frontoparietal region immediately behind the hair line, down to the temporal fossa on the opposite side (fig. 2). The scalp is dissected from the pericranium and is reflected forward so that the entire frontal bone on both sides is exposed down to the frontal sinus. Bilateral frontal flaps then are fashioned, the hinge of

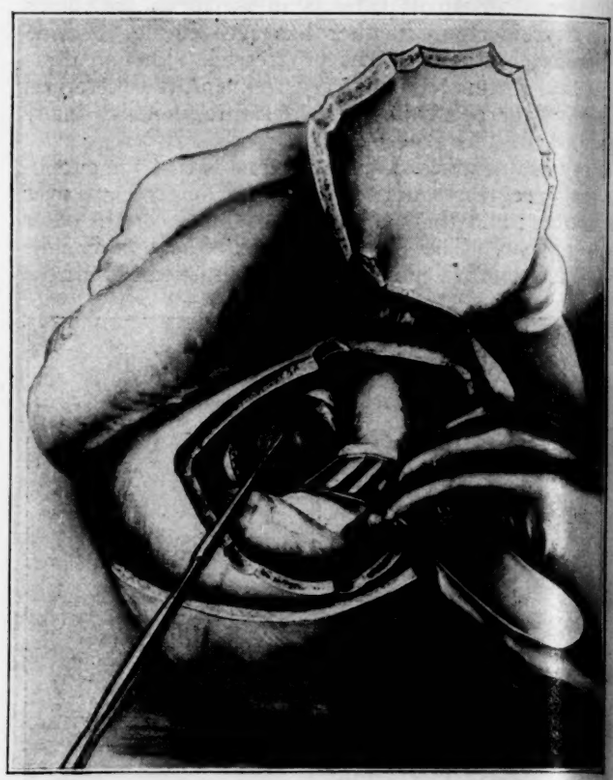

Fig. 5.—Enlarged levator superioris and superior oblique muscles.

each being the temporal muscle. A small ridge of bone is left in the midline for the purpose of stabilizing these flaps when replaced. It will be found that such bone flaps retain an adequate vascular supply even though the scalp has been reflected from them. This is shown by the necessity for the use of bone wax, or other agents, to control oozing from the inner surface of the bone.

Following the reflection of a bone flap, the dura is separated, by means of a broad spatula, from the floor of the anterior fossa in a way familiar to neurologic surgeons as an approach to tumors of the pituitary region. This stripping of the dura from the anterior fossa is carried back to the sphenoidal ridge and the base of the anterior clinoid. Mesially it is continued almost to the cribriform plate. The roof of the orbit then is opened (fig. 3). After carefully separating the orbital fascia so that it will not be opened until the bone removal is complete, we remove the orbital roof by rongeur. The bone opening is carried forward anteriorly to the frontal sinus and laterally to the point where the orbital roof merges into the lateral wall of the skull. Posteriorly, it is continued to the sphenoidal ridge, leaving only a thin line of bone attached to the small sinus, which is harbored in the dural reflection. The roof of the optic foramen and its superolateral margin are removed (fig. 4). Roentgenograms of the foramen, which show its relation to the sphe-

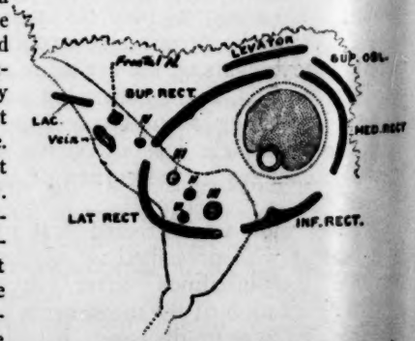

Fig. 6.—Schema to show the position of the annulus of Zinn and its relation to the apex of the orbit. (After S. Whitnall.)

noidal sinus, guide the surgeon as to the extent and direction of bone removal. The orbital contents will bulge through the bone opening as it is enlarged.

When the bone removal is completed, the orbital fascia is opened, care being taken to spare the frontal branches of the fifth nerve. The fat of the orbit varies somewhat in amount, but, in our cases, it has not been increased as stated in the conjectures as to the cause of exophthalmos; nor is it under tension. The orbital content is not particularly vascular.

By blunt dissection the levator superioris and the superior rectus muscles are exposed readily; careful attention should be paid to the fact that their nerve supply comes from below, and the nerve filaments should not be put under undue tension. The internal and external recti likewise may be exposed. The aspect of the muscles varies from a pale, half-cooked appearance to a much deeper color. They are enormously enlarged and thickened, instead of being small ribbons, perhaps 1 mm. or more in thickness and 1 cm. or so in breadth, and have a resistant, rubbery feeling. We estimated that some of the muscles we exposed were from three to eight times larger than normal (fig. 5).

In some patients we carried our dissection downward to expose the capsule of Tenon and the optic nerve as it enters the globe. Ordinarily this is unnecessary. Small fragments of muscle may be taken for pathologic examination; indeed, in the present state of our knowledge of the entire subject, this is advisable. Such specimens should be taken from the margin of the muscle, opposite the entrance of the nerve supply; enough should not be removed to weaken the muscle materially. The orbital fascia having been opened widely in all directions, the ring of Zinn, surrounding the orbital fissure and the optic foramen, may be slit (fig. 6). Usually this is done at the outer margin of the superior rectus muscle.

As a rule hemostasis is not a problem. The orbital content is not vascular and, after oozing from the bone has been controlled carefully, the dura is allowed to come down and rest directly on the orbital content. A similar procedure then is carried out on the opposite side. The bone flaps are replaced and fastened together across the ridge of bone in the midline, the scalp is returned to its former position and is sutured. Separate sutures for the galea and skin are used. The bone openings of the flap, particularly those of the frontal region, are filled in with bone dust or small fragments of bone and the aponeurosis is sutured carefully over them to prevent dimpling of the scalp (fig. 7).

On conclusion of the operation, it will be found that there has been marked recession of the eyes, and that the globes pulsate. Within some hours, edema from handling will occur, and protrusion of the eyes will begin again. This is marked and may be progressive for the first three or four days. During this time the utmost care is needed to protect the cornea. Boric acid ointment for the protruding conjunctiva, careful washing with 2 per cent boric acid solution, and protective goggles are used. After four or five days, there is gradual recession of the edema and, by the end of ten days or two weeks, protrusion of the globes will be found to be less than it was before operation, and the movements of the eye muscles perhaps will be of the same range and degree as before operation. From this time on, there will be steady, slow improvement, both in the range of ocular movements and in the recession of the globes. It has been our experience that this improvement will continue over many months, and, in our most advanced cases, the condition of the eyeballs approached normal only after a lapse of eight months or a year (figs. 8 and 9). In our experience, subjective improvement in vision begins from the fifth to the tenth day and becomes even more striking later. The swelling of the optic disks regresses gradually, and hemorrhages in the retina disappear. Unless a marked state of atrophy has occurred already, satisfactory vision may be expected. Some of those operated on show a faint, persistent pulsation of the globe, not discernible on ordinary inspection, but seen if carefully looked for. Patients ordinarily are unaware of this pulsation and no subjective disturbances of vision result from it.

Fig. 7.—The scar of operation within the hair line.

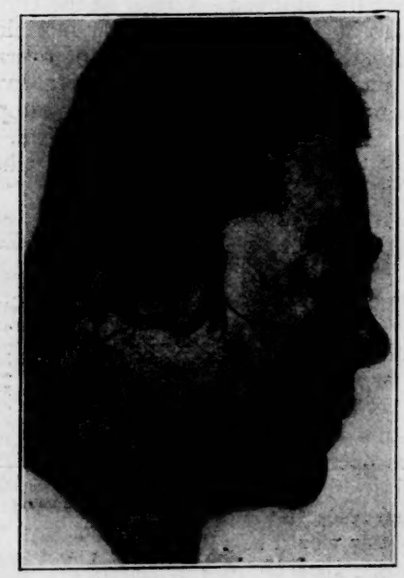

Fig. 8.—E. H. before operation, showing proptosis and inability to close the lids.

Fig. 9.—E. H. one year after operation. Compare with figure 8.

As to the surgical results obtained, six patients have had bilateral orbital decompressions, that is, twelve orbits have been investigated and treated. Four patients were operated on at the University of California Hospital; one was operated on by Dr. R. E. Semmes of Memphis, and one by Dr. P. C. Bucy of the University of Chicago. From these surgeons communications and reports on their patients and on the pathologic material were received.

There have been no deaths and no postoperative complications other than the temporary edema of the orbital tissues. In all of the patients treated, the results have been gratifying; vision has been restored, optic atrophy has been halted, exophthalmos has decreased

and an increased range of ocular movements has followed. Considering the hitherto hopeless outlook for this group of patients, surgical treatment has been singularly gratifying, not only in its results, but in making clear to us the pathologic changes responsible for this type of exophthalmos.

THE END-RESULTS OF SURGERY IN EXOPHTHALMIC GOITER

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AND
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The immediate advantages of surgical measures in the treatment of exophthalmic goiter have been convincingly demonstrated. The operation of subtotal thyroidectomy has been made a safe procedure. It is important, however, to learn by careful clinical examination and laboratory confirmation what the ultimate result may be in patients who some years before have had subtotal thyroidectomy for exophthalmic goiter. In a disease that causes such striking effects on various parts of the body, it is valuable to learn whether or not subtotal thyroidectomy produces a permanent improvement, whether the future lives of patients subjected to the procedure are seriously affected by the disease and whether or not the normal course of life is materially altered by the removal of a considerable portion of the thyroid gland.

For the purpose of this study it was determined to ascertain the results of subtotal thyroidectomy for exophthalmic goiter in a series of patients on whom operations had been performed five or more years before the present writing. The use of compound solution of iodine was first adopted in 1924 and 1925; since this made such a definite change in the operability of patients with exophthalmic goiter and in their postoperative recovery, it was felt that a survey of the late results of operation for exophthalmic goiter would best be obtained by starting with patients operated on in 1926, when compound solution of iodine was used as a routine, as it is at present. For the purpose of this study, then, a consecutive series of patients with exophthalmic goiter operated on in 1926 was selected. Since the study was started in the fall of 1931 but was not completed until the spring of 1932, every patient reported on was operated on at least five years before; many of them, over five years before.

TABLE 1.—*Material for Study* *

Ninety-seven patients with exophthalmic goiter operated on in 1926	
Consecutive cases	186
Not located	56
Letters only (not used)	26
Examination only (not used)	7
Examination and metabolism used in the study	97

* The cases reported in this paper were, as nearly as possible, consecutive cases in which operation was performed in 1926, followed by metabolic tests and clinical examinations in 1931 and 1932.

Letters were sent to 186 consecutive patients with exophthalmic goiter (table 1). Of these we were unable to locate 56, but we succeeded in following 130, or 69 per cent, of these five-year cases. In 26 cases our only information was received by letter. These letters we discarded; we did not use them, because the information was in some measure unreliable. In 7 cases our information came from personal examination of the patient in the clinic, but in these 7 cases we were unable to secure tests for metabolism; these cases, therefore, were also excluded. We have been able to make clinical examinations and metabolism tests of 97 consecutive patients in this follow-up study, which is approximately 50 per cent of all the patients to whom we wrote. In this paper we shall summarize the results of surgical treatment on the 97 patients who have been followed consistently for over five years since operation and have been checked by personal examination and basal metabolic estimations.

It is of interest to note that in 1926, 415 patients were operated on for exophthalmic goiter in the clinic. Five hundred and seventy-four operations were necessary in this group. There were 3 deaths—a mortality rate of 0.72 per cent by patients or of 0.52 per cent by operations. In the clinic these figures still closely represent the yearly mortality average since 1926 in dealing with this type of operation for goiter (table 2).

We have always been impressed with the necessity for careful postoperative examinations of patients with hyperthyroidism, and in dealing with this disease we have insisted, whenever possible, that metabolism tests be taken not only before operation to confirm the diagnosis but also immediately after operation to note the improvement. Furthermore, each patient, after discharge from the hospital, is requested to return every three months during the first postoperative year for clinical examination and metabolism tests. Occasionally patients are unable to return for all 4 tests during the first year after operation, but they usually return for at least 2 tests in the first postoperative year. Of the 97 patients whom we followed in this series, this routine of preoperative metabolism tests and postoperative follow-up metabolism tests for the first year was carried out with relatively few exceptions. We can, therefore, with these repeated examinations, give not only our clinical impression of the severity of the disease and the degree of improvement at varying intervals after the operation but also the metabolic follow-up to check these clinical impressions. This method, we feel, offers a graphic demonstration of the efficacy of surgical measures, something which is available in but few other diseases. Since practically all of the operations on these patients were done either by Dr. Lahey or one of us (Dr. Clute), the end results here cited demonstrate the value of an established treatment that has not changed in any major detail since that time.

In practically every case the basal metabolic rates of these 97 patients were taken the day after admis-

TABLE 2.—*Operative Mortality in Exophthalmic Goiter* *

	Cases	Operations	Deaths	Case Mortality, Per Cent	Operative Mortality, Per Cent
1926.....	415	574	3	0.72	0.52
1927.....	439	596	4	0.9	0.67
1928.....	536	676	0	0.0	0.0
1929.....	448	539	4	0.89	0.74
1930.....	398	568	5	1.25	0.88
1931.....	472	648	3	0.63	0.46
Totals...	2,708	3,601	19	0.70	0.52

* The figures in the table demonstrate the fact that surgical management of exophthalmic goiter is now a safe procedure.

From the Lahey Clinic.
Read before the Section on Surgery, General and Abdominal, at the Eighty-Third Annual Session of the American Medical Association, New Orleans, May 13, 1932.

sion to the hospital, following a night of rest. As would be expected, there was a wide range of rates in this group at entrance. Some of those with low rates had been receiving iodine before coming to the hospital, so that their rates were probably not an exact measure of the degree of hyperthyroidism. On the other hand, certain patients in this group undoubtedly had excessively high rates, owing to their nervousness and fear of the test. The average basal metabolic rate for the entire group at entrance was + 54 per cent.

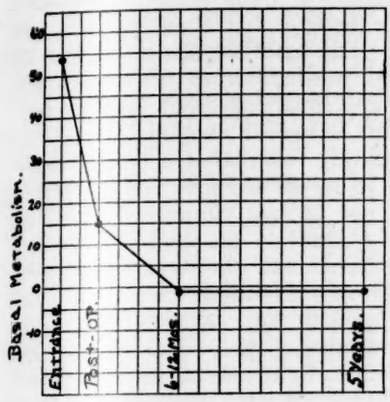

Chart 1.—The average basal metabolic rate of the 97 patients over a period of five years after operation.

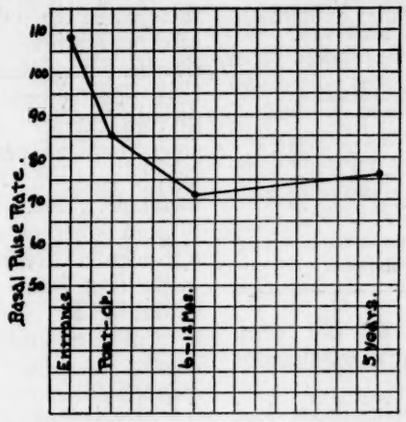

Chart 2.—The basal pulse rate of the 97 patients over a period of five years following operation.

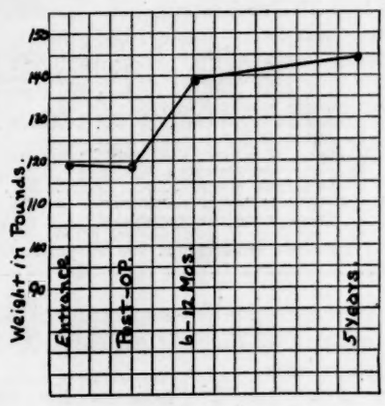

Chart 3.—The average weight of the 97 patients over a period of five years after operation.

After the patients were prepared for operation with compound solution of iodine and rest, a subtotal thyroidectomy was performed. In 35 per cent of cases it was necessary to do this in divided operations. It is generally recognized, and this we have demonstrated to our satisfaction, that subtotal thyroidectomy by divided operations gives the same ultimate improvement in the clinical symptoms and metabolic rates that subtotal thyroidectomy does in a one-stage operation.[1] The average basal metabolic rate of these 97 patients after their final operation on discharge from the hospital was + 15 per cent.

Ninety-three of this group of patients were followed postoperatively with metabolic estimations and clinical examinations at intervals of from six months to a year. The average metabolic rate in these 93 patients at this interval was — 1 per cent.

The final check-up examination that we were able to make on 97 patients from five to six years after operation showed that the average basal metabolic rate for the entire group at this time was — 1 per cent (chart 1).

From this summary of the basal metabolic rates in this group of patients who had had exophthalmic goiter it is apparent that subtotal thyroidectomy produces an immediate return of the basal metabolism to nearly normal, that the metabolic rate reaches normal in from six months to a year after operation in the average patient, and that it is still at a normal level five or more years after the operation has been performed.

It has been definitely shown that the resting pulse rate in exophthalmic goiter roughly parallels the basal metabolic rate. In extremely toxic patients with high basal metabolic rates the pulse rate taken during rest is relatively high, and, correspondingly, in patients with lower metabolic rates the pulse rate is low. In this group of patients we find the basal pulse rate in its course following closely the basal metabolic rate during the period of the disease and in the following years.

In 97 cases the average resting pulse rate at the time of the entrance metabolism test was 108. Following operation the average pulse rate in 97 cases was 85. In the metabolism test made from six months to one year after operation the basal pulse rate in 93 cases was 72. In the final metabolism test, made five years after operation in 96 cases, the average pulse rate was 76 (chart 2).

Marked loss in weight is one of the outstanding symptoms of exophthalmic goiter that permit of analysis and study. In general the more serious the toxicity, the lower the weight; on the other hand, the more complete the return of the patient to normal, the more definite is the gain in weight.

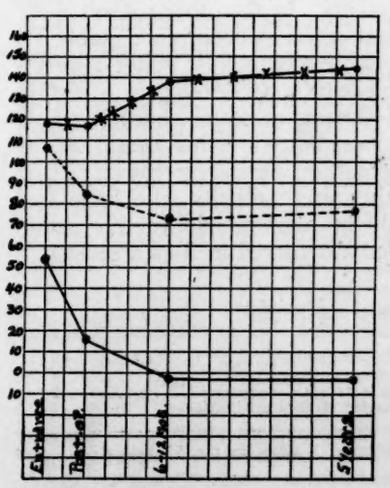

Chart 4.—The effect of subtotal thyroidectomy in exophthalmic goiter. Note the immediate fall of the pulse rate and the basal metabolism in the week following operation and the slight fall in weight at the same time. Following this is seen a definite elevation in weight and a further drop in basal pulse rate and basal metabolic rate in the five year period following operation. The continuous line indicates basal metabolic rate; the broken line, the pulse rate, and the x line, the weight.

In these 96 cases the average weight on admission was 119 pounds (54 Kg.). Six days postoperatively the average weight for the same group was 118 pounds (53.5 Kg.). This lack of significant variation in body weight during the period of preparation for operation and in the immediate postoperative course demonstrates, we believe, that with the present ideas of treatment of exophthalmic goiter, which include the provision of an adequate intake of food for the increased metabolic requirements, loss of weight at once ceases in the majority of patients when treatment is instituted.

The average weight of 92 patients taken from six months to a year after operation had increased to 139

1. Clute, Howard M.: The Effect of Compound Solution of Iodine and Rest in the Surgery of Exophthalmic Goiter, J. A. M. A. 86: 105 (Jan. 9) 1926.

pounds (63 Kg.). In 96 patients in whom the weight was listed from five to six years after operation the average weight was 143 pounds (64.9) Kg.) showing an average gain of 24 pounds (10.9 Kg.) over a period of from five to six years (chart 3).

Exophthalmos is one of the prominent effects of exophthalmic goiter, and since it is so disfiguring, it is one of which patients are most anxious to be relieved. In 100 consecutive patients examined in 1926, 62 were noted as having definite and unquestionable exophthalmos preoperatively—an incidence of 62 per cent. Twenty-one of the 100 patients showed exophthalmos five years later.

TABLE 3.—*Exophthalmos*

100 patients examined in 1926	
Exophthalmos present	62
Exophthalmis absent	38
The same 100 patients examined 5 years later	
Exophthalmos present	21
Exophthalmos absent	79
Of 62 patients having exophthalmos in 1926	
43 showed none five years later	
69.3 per cent of exophthalmos cured	
In 2 patients exophthalmos first appeared after operation	

In 2 of the 21 patients the exophthalmos had appeared postoperatively within a relatively short time before the present writing, and had not been present at the time of the original examination five years previously. Of the 62 patients who had exophthalmos in 1926, in 43, or 69.3 per cent, it disappeared following subtotal thyroidectomy (chart 4). We feel from these figures that we may properly anticipate that 7 of 10 patients having exophthalmos at the time of their first examination will be free of the exophthalmos when surgically relieved of hyperthyroidism. The late occurrence of exophthalmos is explained in one case by a recurrence of slight toxicity. In the other patient there was no obvious explanation for its occurrence (table 3).

Every one dealing with exophthalmic goiter appreciates the fact that myxedema may develop in a certain number of patients following subtotal thyroidectomy. It is because of the possibility of this condition, as well as that of recurrent or persisting toxicity, that follow-up contact with goiter patients who have had hyperthyroidism should be maintained. In this group of 97 patients, myxedema occurred in 3 as a persistent condition; it is still present and requires treatment with thyroid extract. It has been said that myxedema never follows subtotal thyroidectomy for exophthalmic goiter unless marked thyroiditis is present in the gland at the time of operation. One of the 3 patients suffering from myxedema showed thyroiditis, grade II. In neither of the others was thyroiditis reported by the pathologist (table 4).

TABLE 4.—*Myxedema* *

Patients followed	97
Patients having persistent myxedema	3
Thyroiditis present in patients with myxedema	1
All three patients well under thyroid medication	

* Persistent myxedema occurred 3 times in the 97 patients followed for five years.

All 3 patients with definite myxedema are now well, and it is difficult for us to report their cases with complete fairness in our final analysis of the results of surgical measures in exophthalmic goiter. We believe that they should be considered as patients who are cured of exophthalmic goiter, yet we do not feel that they should be placed in the group with those who are cured and do not require further treatment for myxedema. We are unable to note anything about these patients at the present time that appears abnormal. They feel well, work regularly and enjoy life; nevertheless, they are patients with myxedema following thyroidectomy. They take desiccated thyroid regularly, and therefore cannot be classified as ideally cured.

Four patients in the group had low basal metabolic rates when the metabolism test was made three months after operation. We believe that these patients had transient myxedema. The basal metabolic rates of all have now returned to normal; none of them require thyroid extract; all are apparently well, and we consider them as patients cured of exophthalmic goiter. In the past we frequently felt that if a patient had a metabolic rate of — 16 we should give him desiccated thyroid whether or not he had clinical evidences of myxedema. Recent studies of the blood cholesterol in patients with low basal metabolic rates made in the clinic by Dr. Lewis M. Hurxthal have been most helpful to us in dealing with these patients. In patients having low basal metabolic rates who showed no obvious clinical evidence of myxedema we have found the blood cholesterol normal. If, however, the basal metabolic rate is markedly elevated, it has been established that these patients with slightly low rates must be considered as having myxedema, and that they will show definite improvement on thyroid medication.

TABLE 5.—*Postoperative Hyperthyroidism in Twelve Patients* *

I. Persisting hyperthyroidism—6 patients	
(a) 4 required reoperation	
(1) 1 was cured	
(2) 1 died (embolus)	
(3) 2 are still toxic but are controlled with compound solution of iodine	
(b) 2 are mildly toxic but are controlled with compound solution of iodine	
II. Recurrent hyperthyroidism—6 patients	
(a) 2 required reoperation	
(1) 1 has been cured for three years	
(2) 1 was recently operated on	
(b) 4 are mildly toxic but are controlled with compound solution of iodine	

* The incidence of postoperative hyperthyroidism in the 97 patients includes all hyperthyroidism occurring during the five year interval after operation.

From our observation of the patients with myxedema following thyroidectomy and of their ability to work and pursue their regular course of life, we feel that myxedema is not a condition to be feared. While it is undesirable to produce myxedema, it doubtless is preferable to a persistent hyperthyroidism.

The persistence or recurrence of hyperthyroidism after subtotal thyroidectomy for exophthalmic goiter is the most important reason for postoperative estimations of metabolism and postoperative examinations of these patients. We have always known that some degree of postoperative toxicity was present in from 6 to 10 per cent of our patients; at times it was so mild as to be negligible, and at other times so severe as to require reoperation. In our present study, hyperthyroidism was found to have recurred in 12 patients in this group after their first operation had been completed (table 5). We have endeavored to be extremely critical and frank in allocating patients as having persistent hyperthyroidism, and we believe that this figure is, if anything, too high for an average group of postoperative cases. We know that patients with persisting hyperthyroidism are among the first to return in any follow-up study, while patients who are

perfectly well are the most difficult to persuade to return.

Hyperthyroidism after thyroidectomy occurs in 2 distinctly different groups of patients having different clinical histories. In one group the hyperthyroidism is clearly *persistent* after thyroidectomy. These patients have a basal metabolic rate which never quite reaches normal after operation, and which in the course of weeks or months persists at this or a higher level. In the other group of patients the hyperthyroidism is definitely and completely cured for an interval of from six months to a year or more after thyroidectomy. This is shown by the complete relief from all clinical evidences of the disease and by a return of the metabolic rate to a normal figure. When hyperthyroidism arises in these patients, we consider it *recurrent* hyperthyroidism.

The patients with persistent hyperthyroidism are those who have been most difficult to cure. In this group of 6, 4 required operations later, and only 1 was cured. Two of these 4 are still toxic, but their symptoms are adequately controlled with compound solution of iodine, and they are able to lead normal lives. One of the 4, a patient with established auricular fibrillation for over five years, died of an embolus eight days following a recent secondary operation on the thyroid gland. The remaining 2 of these 6 patients with persisting hyperthyroidism are still mildly toxic but the condition is being adequately controlled with compound solution of iodine.

In the 6 patients who had a recurrence of hyperthyroidism, 2 required later operations; 1 of the latter has remained well, with a normal metabolic rate, for three years. The other was operaterd on so recently that no report is adequate. The remaining 4 patients with recurrences all had hyperthyroidism of a mild type and their condition is completely and adequately controlled with compound solution of iodine, in daily doses of 10 minims.

Injury to the recurrent laryngeal nerve during the course of operation on the thyroid gland is an accident that may occur and produce most distressing consequences. In any consideration of the results of operation in exophthalmic goiter the occurrence of bilateral paralysis of the recurrent laryngeal nerve should be discussed. This complication did not occur in this series of patients, and has occurred but once in our entire experience with over 10,600 operations for goiter in the clinic. Obviously, then, injury to the recurrent laryngeal nerve in thyroid surgery is not a feature of such danger as to be considered by any one fearful of operating for exophthalmic goiter. Injuries to a single recurrent nerve have occurred, but they have never been sufficiently serious to cause troublesome symptoms.

Injury to parathyroid bodies in the course of thyroidectomy is frequently discussed and is considered as an outstanding danger. In our entire experience with over 10,600 operations for goiter, complete tetany has occurred but 3 times, and transient tetany, 11 times. In the last five years only 4 cases of tetany have been seen, and 3 of these were in secondary operations on the thyroid gland. One case of transient tetany occurred in this group of patients operated on in 1926. This patient was reexamined recently and found to have no evidence of tetany now and to require no treatment for the condition. She has borne a child since the operation on her thyroid gland; following the delivery of the baby she had tetany again for a few days. This was readily controlled with calcium lactate and viosterol administered by mouth, and her blood calcium and a clinical examination now show that she is entirely free from any evidence of the disease. We do not feel that tetany is to be feared as a likely complication of present-day operations on the thyroid.

In the entire group of 134 patients followed by mail and examination it was found that in the five to six year interval since operation 4 had died. It is interesting to note the causes of death in these patients: 2 died of pneumonia at intervals of two and three years after operation; 1 died of cancer of the pancreas some months after operation, and 1 died of nephritis four and one half years after operation.

TABLE 6.—*Summary of End-Results with Ninety-Seven Cases Five Years After Operation*

Well	82	
Well after reoperation or administration of compound solution of iodine	7	
Well but requiring thyroid extract	3	
Total cases relieved by operation	92	or 94.8%
Toxic but controlled with compound solution of iodine	4	
Dead after reoperation	1	

In summarizing the results obtained in this group of 97 patients who have been accurately followed, we feel that in 82 patients complete and satisfactory cure was obtained. In 7 other patients slight toxicity is still present, entirely controlled by either secondary operation or compound solution of iodine. In three patients of the group myxedema developed; this was entirely controlled by desiccated thyroid. Four of the patients in the group are still toxic. None of the 4 is in any way incapacitated, and all are working. One of the patients in the group died following a recent secondary operation for recurrent hyperthyroidism and congestive heart failure (table 6). It is, therefore, our belief that 92, or 94.8 per cent, of these 97 patients are cured of their disease by subtotal thyroidectomy, and that this figure may be assumed to be a fair estimate of the probability of cure of exophthalmic goiter by adequate surgical measures.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. DINSMORE, DRS. NAFFZIGER AND JONES, AND DRS. CLUTE AND VEAL

DR. R. E. SEMMES, Memphis, Tenn.: A patient on whom I operated for progressive exophthalmos had had a subtotal thyroidectomy a year before, with relief of all his symptoms except the exophthalmos. I first saw him with his eyes protruding so that the lids would not cover the cornea, and there was already some desquamation from exposure. His vision had been reduced to 10/200 in the left eye and 15/200 in the right eye, and it was necessary for him to be led. The exophthalmos was greater in the left eye. With the experience of Drs. Naffziger and Jones in mind, I turned down the usual transfrontal flap on the left side, and when the orbital roof was opened the capsule of the eye bulged markedly. On opening the capsule I found that there was not only no increase in the orbital fat but almost no orbital fat present. The muscles were pale and edematous in appearance, as in the case of Drs. Naffziger and Jones, and they were estimated to be approximately ten times the size of the normal. After I removed the roof of the orbit and the top of the optic foramen and closed the flap, the patient's eye had gone back to the normal position on that side. There was a good deal of swelling for a few days after the operation, but this subsided rather rapidly. At present,

with the recession of the left eye, the vision has returned to normal on that side. In the right eye the vision is now reduced to 10/200. The basal metabolic rate is subnormal (—15). The blood cholesterol is up to about 390 and there are other evidences of myxedema. Therefore with the idea that this condition might be associated with myxedema, I have administered thyroid extract, without any benefit. I have also continued the dehydration without much benefit and am therefore going to resort to operative procedure again.

DR. E. R. ARN, Dayton, Ohio: I shall limit my discussion to that portion of the paper of Drs. Clute and Veal which refers to persistent hyperthyroidism. Those who have had a wide experience in the field of goiter surgery have encountered from time to time cases of toxic diffuse goiter in which the symptoms of hyperthyroidism have either persisted or recurred following adequate subtotal thyroidectomy. In such cases it has been common practice to do a second exploration of the thyroid area. In some instances a considerable amount of thyroid tissue, in excess of that which was left at the time of the first operation, will be found. Radical removal of the remaining thyroid tissue will result in a disappearance of the symptoms of hyperthyroidism in a majority of such cases. On the other hand, the secondary operation will occasionally reveal only a few islands of thyroid tissue remaining after the first operation, and the surgeon feels reluctant to remove any of this tissue. The surgeon may satisfy himself by examination of the thyroid area that further operation on the thyroid will be useless. Common experience has revealed that the continuous administration of compound solution of iodine is of little or no avail in such cases. For this type of case it has become apparent that some new approach to the problem is indicated. Stimulated by the results obtained by Crile, following suprarenal denervation in such cases, I have subjected a small group of patients of this type to this operation, with uniformly favorable results. A complete report of my experiences with the Crile operation will be published in the near future. Three of the patients on whom bilateral suprarenal denervation was done were relieved of persistent exophthalmos in addition to the general improvement as related to their hyperthyroid symptoms. It has long been recognized that the suprarenals and the sympathetic nervous system are involved in the Graves syndrome. Suprarenal denervation appears to provide a new and effectual method for further controlling the sympathetic nervous system imbalance and the concomitant endocrinal dysfunction.

DR. DONALD GUTHRIE, Sayre, Pa.: I am fully in accord with what Dr. Dinsmore says as to the familial tendency in goiters seen in young children. I also believe that infection plays an important part. One sometimes becomes almost weary in examining case after case brought by frightened parents who have been told by a school examining physician that their child has a goiter and needs operation. It is well known that these are largely the harmless adolescent goiters, but it must be remembered that every once in a while as a result of school examination one of these children is picked up and referred early. I should like to ask Dr. Dinsmore just how much gland he leaves behind in these cases. It has always been my fear of throwing some of these children into myxedema. I would far rather get along with a persistent mild case of hyperthyroidism following operation than to have myxedema as a complication. It has been my practice for a long time to leave behind nearly two times as much gland as I would in an adult showing the same amount of symptoms, for one never knows just exactly the demands that may be made on the thyroid in the future. I should like to ask Drs. Clute and Veal what their plan, if any, is about the eradication of foci of infection following operation, and also just how much the normal activities of their patients are limited, and further if they can report the average basal metabolic readings just before operation; in other words, what they believe is the time to operate on these patients after a period of preparation.

DR. R. M. HOWARD, Oklahoma City: Exophthalmic goiter in children does not occur frequently but is occasionally seen. In 300 recent cases of exophthalmic goiter reviewed I have had to deal with but four cases. One was a white child aged 6 years, another was 11 years of age, another 16, and a Negro girl was 14. All had the typical symptoms of the disease of a rather severe degree. The percentage of cases seems small. Oklahoma City is rather out of the endemic goiter belt. In the presence of persistent or progressive exophthalmos following operation I have been almost helpless, not only in my efforts to offer relief but in being able to offer myself or my patients a satisfactory explanation for its occurrence. The work of Drs. Naffziger and Jones is interesting and if the cause of the condition, as brought out by them, proves to be the rule, a remedy for the more severe cases is available. Perhaps preserving the venous circulation in the neck may be of prophylactic value. The results of surgical treatment in exophthalmic goiter, while not entirely satisfactory, when compared with the results of other forms of treatment are so much better that little room for argument is left. Statistics such as those presented by Drs. Clute and Veal go far in confirming this view. However, all men doing goiter work have their cases with persistent symptoms, their recurrences, and their cases of hypothyroidism; the first two conditions require further operation and the last often requires continued administration of thyroid extract. The state of the patient in any of these conditions is not very satisfactory. Nor is the explanation of the occurrence of these unsatisfactory states always clear. The amount of gland left following operation is important. Complications existing in the gland itself, as well as the likely future demands to be made on the gland, must be carefully considered. The results of surgical treatment in exophthalmic goiter are not dependent alone on technical skill. Careful judgment acquired by experience is necessary in the care of these patients, not only in their preoperative preparation and during the operative procedure, but in their supervision for many months postoperatively.

DR. WILLARD BARTLETT, JR., St. Louis: The results reported by Dr. Dinsmore and Drs. Clute and Veal constitute a mark to shoot at. In my opinion, the end-results of Drs. Clute and Veal are largely a reflection of the continued supervision of their patients, for recurrences are primarily the consequence of the patient's habits of life; these depend to a large extent on the group of persons with whom he lives. I am interested more in the ratio between preoperative and postoperative deaths in any given goiter service, as an index of the problem confronting the surgeon, than on operative mortality alone. From 1926 to 1930, 38 per cent of my goiter deaths occurred before operation and 62 per cent afterward. But during the past twelve months 84 per cent were preoperative and 16 per cent postoperative. This marked improvement following the previous study is due to one thing, better estimation of the patient's ability to withstand operation. The most valuable agent in bringing about this change has been development of the test of ability to hold the breath as a criterion of operability. A word on the paper of Drs. Naffziger and Jones: I have had four cases of recurring exophthalmos in the past five years. Two outstanding features in each of them were hypothyroidism and psychic shock. Early cases should be studied comprehensively, especially from a physic and metabolic standpoint, and treated accordingly. One man who had almost complete loss of vision in his right eye for one year improved slowly on thyroid feeding and now, after five years, has almost perfect vision and no exophthalmos. This was before a resource was available in the operation that Dr. Naffziger has devised. On the basis of that and a similar result obtained recently in which the intense edema around the orbit was apparently a part of the general edema of a marked myxedema, which responded promptly to thyroid, it is worth bearing in mind that if these patients can be got early and their exact status determined when exophthalmos appears, a certain group of them is going to be prevented from going over into the later stages with the persistent and unchangeable results in the orbit due to chronic lymphedema and fibrosis.

DR. FRANK H. LAHEY, Boston: There are one or two points which I might make to stress what I have always said, and that is the need of leaving a considerable amount of thyroid tissue in children. All of these men who have spoken about thyroidectomy in children realize but have not stated the reason; namely, that the thyroid is so necessary for development that the penalty of myxedema in a child is much higher than in an adult. One should take myxedema very seriously even in adults. The complacency with which many men who are doing thyroid surgery face myxedema, I believe, is wrong. I feel strongly that the patients who have myxedema post-

operatively are never quite the same psychically as those who have sufficient thyroid to meet the variable needs of thyroid secretion. As to the question of recurrent hyperthyroidism, I should like to present another practical point based on my experience of not infrequently leaving too much thyroid tissue. One cannot depend on palpation of thyroid remnants to demonstrate whether or not too much thyroid has been left. The thyroid remnants following subtotal thyroidectomy have a way of sinking into the groove between the esophagus and the trachea deep in the neck so that they are not readily palpable. Therefore, when one has clinical plus metabolic evidence of persistent hyperthyroidism, one does not need to be deterred from exploring the neck because one cannot find remnants, because in a great majority of instances when the neck is exposed one will find remnants of considerable size, the removal of which in the majority of cases will produce relief or cure. There is one warning further, and that is that a higher percentage of tetany must be anticipated, and a higher percentage of recurrent laryngeal paralysis in operations in persistent and recurrent hyperthyroidism. I should like to call attention to one other point. Since Catell and Mason in our clinic have proved that one can successfully transplant parathyroids, it becomes the obligation of every surgeon who is removing thyroids to search carefully for the parathyroids, and when they are found not to send them to the laboratory and be interested in examining them under the microscope, but to transplant them into the sternocleidomastoid muscle, where I feel certain they will take and often prevent postoperative tetany.

DR. HOWARD C. NAFFZIGER, San Francisco: Two have mentioned the fact that these patients have shown a normal or low basal metabolic rate. In all the cases reported in the literature, one finds that this is true. Most of them have received thyroid, but the exophthalmos has not been checked. It is possible, however, that in milder cases of progressive exophthalmos it might be helpful. I should like to impress on those who are doing thyroid surgery that it is desirable to secure extrinsic eye muscles from patients who die with exophthalmos from exophthalmic goiter. It is evident why there is so little opportunity to secure these after hearing the paper of Drs. Clute and Veal, the mortality is so low. It is desirable to determine whether these muscles are normal or large, whether they have edema, or whether they show any inflammatory change whatever. It is interesting to speculate on the cause of this inflammatory change in the muscles. In myasthenia gravis, similar changes have been reported in the extrinsic eye muscles. It might be recalled that enlargement of the thymus has been found in that disease. Enlargement of this gland has not been present in the cases of progressive exophthalmos that we have studied. The changes in the eye muscles are also similar to those in the heart muscle in thyroid disease; they are like the changes seen in the heart muscle in rheumatic fever, and they have points of similarity to the changes that are seen in the muscles in Volkmann's palsy and in the experimental instances of chronic venous obstruction. We are carrying on some experimental work in that connection. There have been instances of exophthalmos reported in rabbits, produced by performing a thyroidectomy and following it with thyroid feeding. This has not been confirmed as yet.

DR. R. S. DINSMORE, Cleveland: I am sorry that I did not mention anything about technic in the discussion. It is quite true, as Drs. Lahey and Guthrie have pointed out, that one must leave more thyroid tissue in these children. They are more prone to develop hypothyroidism after the operation, and I have made it a routine practice to leave, as Dr. Guthrie has stated, approximately twice the amount that I would leave in a similar case in an adult.

DR. HOWARD M. CLUTE, Boston: Dr. Guthrie inquired as to our plan of removal of foci of infection in exophthalmic goiter patients. It has been our feeling and our practice that the prime lesion which was upsetting these patients was their hyperplastic thyroid, and we have never had sufficient proof that the fundamental cause of hyperthyroidism was infection. We therefore undertake first the cure, as rapidly as possible, of their hyperthyroidism. Occasionally operations must be delayed because of some acute infection, which we feel is a serious contraindication to operation; but in nonacute infections we wait until the hyperthyroidism is controlled before we attack the infection. In past years we have been insistent that during the first year after operation the patient's activities should be distinctly limited. We have forbidden pregnancy, we have insisted that patients go to bed early at night and that they do not undertake any strenuous business or social efforts. In recent years we have become more lenient and we are coming to think that when we remove an adequate amount of hyperplastic tissue we cure the disease and that the patients are normal relatively soon after the procedure is over. It is not at all uncommon now for these patients to return to their full duty within certainly three months of the time of operation. The average drop in basal metabolic rate in our experience in the preoperative period of preparation is from 30 to 40 per cent, or even more. We do not depend on the drop in metabolism in deciding as to the time for subtotal thyroidectomy. Many patients who are mildly toxic, who are not severely ill, we operate on about the eighth or ninth day. In patients who are severely ill, regardless of their metabolism (and many of the sickest patients with the apathetic type of hyperthyroidism which Dr. Lahey has discussed will not have high basal metabolic rates), operative procedure must be delayed until we are clinically impressed with the fact that they are well able to stand operation. I think that the preoperative metabolism that is particularly significant is the one which does not come down but which goes up. The patient who after hospitalization and treatment with iodine and rest has an increasing metabolism and pulse rate and a falling body weight is a most serious risk. In these cases surgery must be delayed until improvement is evident or must be adopted as a last resort and with full recognition of its seriousness.

MILK IRRADIATED BY THE CARBON ARC LAMP

A CLINICAL AND LABORATORY STUDY OF RICKETS

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In the course of the past five years we have reported our experiences, clinical as well as experimental, with various activated substances.[1] The first of these communications dealt with irradiated cholesterol, ergosterol, yeast and dried milk. Those which followed were concerned more particularly with the therapeutics of irradiated ergosterol (viosterol), with its dosage and standardization. Last year a somewhat different aspect was considered,[2] and a clinical test was reported of the milk of cows which had been fed irradiated yeast. Concurrently with these various clinical papers, communications have been made, in some instances in cooperation with other laboratories, dealing more particularly with laboratory or technical features. The most recent one, published in conjunction with Supplee and Dorcas, gave in detail the energy requirements for the antirachitic activation of irradiated milk[3] and showed the high degree of potency of activated dry milk. The present paper concerns itself more especially with clinical experiences with an irradiated fluid milk which has been activated under the most carefully controlled physical conditions.

1. Hess, A. F.; Lewis, J. M., and Rivkin, Helen: Clinical Experiments with Irradiated Ergosterol, J. A. M. A. **91**: 783 (Sept. 15) 1928; The Status of the Therapeutics of Irradiated Ergosterol, ibid. **93**: 661 (Aug. 31) 1929; Newer Aspects of the Therapeutics of Viosterol (Irradiated Ergosterol), ibid. **94**: 1885 (June 14) 1930.

2. Hess, A. F.; Lewis, J. M.; MacLeod, F. L., and Thomas, B. H.: Antirachitic Potency of the Milk of Cows Fed Irradiated Yeast or Ergosterol, J. A. M. A. **97**: 370 (Aug. 8) 1931.

3. Supplee, G. C.; Dorcas, M. J., and Hess, A. F.: Irradiated Milk: The Energy Requirements for Antirachitic Activation, J. Biol. Chem. **94**: 745 (Jan.) 1932.

The subject of the antirachitic activation of milk by means of ultraviolet rays is no longer new. In March, 1925, it was reported: "Experiments which we have recently carried out would lead us to believe that milk can be activated, and that this property may be evident in infants, who, unlike rats, are not protected by a mere increase in the phosphorus in the dietary."[4] The year preceding, we had stated that small amounts of irradiated milk gave uncertain results in protecting rats from rickets. Since this time, clinical reports on milk treated in this manner have been numerous and ever increasing. The first, to our knowledge, was that of Cowell[5] in England; in this country, Kramer[6] published an early paper which recorded favorable results with this new therapeutic agent; in Germany, Scheer[7] has repeatedly drawn attention to the value of milk that has been irradiated by an apparatus that makes use of a special mercury vapor lamp; in fact, he introduced milk of this kind on a large scale in the city of Frankfurt. In Switzerland, Wieland[8] has urged the adoption of irradiated milk as a food for infants. It may be added that Daniels and her collaborators[9] have extended these clinical observations by demonstrating that an intake of irradiated milk is associated in infants, with exceptional retention of calcium and phosphorus.

From a technical point of view the irradiated milk that we fed, both fluid and dry, differed markedly from that which has been employed by others. In the first place, a carbon lamp of the flaming arc type was used for activation instead of a mercury vapor lamp, and furthermore the character and the amount of radiant energy were carefully controlled and measured. During a preliminary test of two years, milk had been subjected to a series of mercury vapor lamps, but this method was found to be undependable, owing largely to irregularities in the energy output of the lamps. The details in regard to the carbon arc lamps used for activating the milk that we tested this year will be found in the paper to which reference has been made.[3] These data may be summarized by the statement that a C carbon was employed and that a total of about three and a half million ergs, between 2,000 and 3,000 angstrom units, were applied per cubic centimeter of milk for a period of sixteen seconds. With a suitable quality and quantity of radiant energy, the antirachitic properties of milk can regularly be increased within a few seconds. The rate of vitamin D formation in milk and the quantum efficiency of the reaction are greatest during the very early stages of the process, and although up to certain limits the degree of antirachitic potency that can be imparted to milk bears a direct relationship to the amount of energy applied, beyond these limits additional energy does not increase the vitamin D content proportionately. The dried as well as the fluid milk contains approximately 50 rat units per liter. There is no possibility of elaborating a product of excessive potency by means of irradiation. According to Supplee and his collaborators,[10] the concentration of vitamin D in milk irradiated in this way is equivalent to about 0.0025 mg. per liter. Without going into the details of these calculations, it is clear that only by subjecting the milk to well controlled and definite amounts of radiant energy can one hope to elaborate a product of fairly constant antirachitic potency. It should be added that this milk suffered only an insignificant loss of vitamin A in the course of irradiation.

Our investigation was conducted under conditions very similar to those of last year when the so-called irradiated yeast milk was fed. In other words, the infants were about 1½ to 6 months of age, somewhat over 100 being selected from two baby health clinics of the department of health in New York. Thorough clinical examinations were carried out from time to time, the infants were weighed regularly thereafter, and frequent roentgenograms of the wrists were taken, for which we are indebted to Mr. Siegel of the Meinhard Memorial Health Center. Throughout the entire period, which extended from the beginning of January to the end of March, careful follow-up work was carried out by a full time nurse whom the commissioner of health assigned to assist in this study. The babies took about 24 to 32 ounces (750 to 1,000 cc.) of milk a day, which was supplemented by cereal and vegetables for the older group. A large number of the infants were Negroes, mostly Porto Ricans, a circumstance that rendered the test especially severe. In addition to these infants in the clinic, a smaller number were observed in the Home for Hebrew Infants, where they could be studied continuously under conditions that were susceptible of control and where observations could be checked by chemical analyses of the blood.

TABLE 1.—*Prevention of Infantile Rickets by Feeding Pasteurized Irradiated Milk*

				Physical Examination			Roentgenogram		
Name	Date	Age, Months	Weight, Pounds	Beading	Craniotabes	Bowing	Date	Result	Comment
R. N.	1/ 8	2	10½	±	++	++	3/14	Negative	Negro
	2/23	3½	13¾	+*	+++	++			
	3/25	4½	15¼	+	+++	++±			
J. M.	1/ 8	2½	10	+†	—	+	3/11	Spreading	
	2/23	4	11¾	+*	+	+			
	3/25	5	13	+	—	+			
G. C.	1/ 8	2½	10¼	±	+±	+	2/29	Negative	Porto Rican
	2/23	4	13	+	+±	+			
	3/25	5	15	+	+	+	3/18		
L. G.	1/ 8	5	17¼	±	+	+±	3/ 4	Negative	Porto Rican
	2/23	6½	19¼	+	—	++			
	3/25	7½	19½	+	—	++	3/24	Hypercalcification	Infection
M. H.	1/ 8	7	20	±	—	+	2/24	Negative	
	2/23	8½	22¼	+	—	+			
	3/25	9½	23¾	+	—	+	3/16	Spreading healed	
J. H.	1/ 8	4	12	+†	+	+	2/23	Negative	
	2/23	5½	14	+*	+	+			
	3/25	6½	16	+±*	—	+	3/15	Negative	
J. V.	1/ 8	5½	15	—	—	++	3/11	Negative	
	2/23	7	15¾	±	—	++			
	3/25	8	17	+	—	+±			
R. C.	1/ 8	4	14	+†	—	+±	1/13	Negative	Porto Rican
	2/23	5½	16	+*	—	+±			
	3/25	6½	16	+	—	+±	3/30	Negative	Grip
T. B.	1/ 8	5	11	+†	+	+	3/ 9	Spreading	
	2/23	6½	13	±	±	+			
	3/25	7½	15	±	—	+			
S. B.	1/ 8	5½	14	+†	—	+±	3/11	Negative	Negro
	3/29	8	17½	+	—	+			
M. C.	1/ 8	1½	9	±	—	+	3/15	Slight spread	
	2/23	3	11¼	+	—	+			
	3/25	4	..	+	—	++			
J. P.	1/ 8	7	16¾	±	—	+	3/ 9	Negative	Porto Rican
	2/23	8½	18¼	±	—	+			
	3/25	9½	18½	±	—	+			

4. Hess, A. F., and Weinstock, Mildred: A Further Report on Imparting Antirachitic Properties to Inert Substances by Ultraviolet Irradiation, J. Biol. Chem. **63:** 297 (March) 1925.
5. Cowell, S. J.: Irradiation of Milk and the Healing of Rickets, Brit. M. J. **1:** 594 (March 28) 1925.
6. Kramer, Benjamin: Rickets in Infants, Am. J. Dis. Child. **30:** 195 (Aug.) 1925.
7. Scheer, K., and Rosenthal, P.: Die antirachitic Wirkung von in Kohlensäureatmosphäre bestrahlter Milch, Ztschr. f. Kinderh. **44:** 235, 1927.
8. Wieland, E.: Aus der Bestrahlungstherapie der Rachitis, Monatschr. f. Kinderh. **34:** 237, 1926.
9. Daniels, Amy L.; Stearns, Genevieve, and Hutton, Mary K.: Calcium and Phosphorus Metabolism in Artificially Fed Infants, Am. J. Dis. Child. **37:** 296 (Feb.) 1929.
10. Supplee, G. C.; Hanford, Z. M.; Dorcas, M. J., and Beck, H. H.: Irradiated Milk: The Amount of Vitamin D and Its Rate of Formation, J. Biol. Chem. **95:** 687 (March) 1932.

TABLE 1.—*Prevention of Infantile Rickets by Feeding Pasteurized Irradiated Milk—Continued*

Name	Date	Age, Months	Weight, Pounds	Physical Examination: Beading	Craniotabes	Bowing	Roentgenogram: Date	Result	Comment
L. C.	1/ 8	1½	11½	+†	+	+	1/13	Spreading	Porto Rican
	2/23	3	15½	+	++	++	2/23	Spreading	
	3/25	4	17½	+	++	++	3/14	Spreading marked	
N. M.	1/ 8	2	10¾	+†	+	++	3/11	Slight spread	Porto Rican
	2/23	3½	12¾	±	+	++			
	3/25	4½	15¾	±	+	++			
J. M.	1/ 8	2½	11¾	±	±	+	3/14	Negative	
	2/23	4	14	±	±	+			
	3/25	5	15¾	+*	+	+			
N. O.	1/ 8	4	12	±	—	+	2/24	Negative	
	2/23	5½	13½	+	—	+			
	3/25	6½	14¼	+	—	+	3/ 9	Negative	
O. G.	1/ 8	1½	10½	±	—	±±	2/24	Negative	Porto Rican
	2/23	3	13½	+	+	±±	3/16	Negative	
	3/25	4	15¾	+*	±	±±			
K. W.	1/ 7	3½	15¼	±	+	++	3/10	Negative	
	2/27	5	17	+	+	++			
	3/26	6	18½	+	+	++			
H. V.	1/ 7	3½	13½	±*	+	+	3/ 8	Slight spread	
	3/25	5	16¼	+*	—	+			
	3/26	6	17	+*	—	+			
H. A.	1/ 7	2½	11	+†	+	++	3/18	Negative	Porto Rican
	3/23	4¼	13¾	+	—	++			
	3/25	5	14½	+	—	++			
A. M.	1/ 7	4½	13	±	—	±±	2/29	Negative	
	2/23	6	16	+	—	±±			
	3/25	7	17½	+	—	±±	3/15	Negative	
E. H.	1/ 7	4	11¼	±	+++	±±	3/ 8	Moderate	Negro
	3/ 8	6	14½	±	—	++		Marked healing	
	3/23	6½	14¾	±	—	++			
R. T.	1/ 7	5	15	±	—	±±	3/11	Negative	Negro
	2/27	6¾	17¼	±	—	±±			
	3/24	7¾	18¼	+	—	+			
M. D.	1/ 7	5	20½	±	—	±±	2/29	Negative	
	3/23	6½	23¼	+*	—	++			
	3/26	7½	24	+*	—	++	3/18	Negative	
I. B.	1/ 7	1¾	10	±	+	+	3/10	Negative	
	2/27	3½	13½	+	±	+			
	3/26	4½	14¾	±	—	+			
M. H.	1/ 7	1	7¾	—	±±	+	3/10	Negative	
	3/24	2½	12	—	±±	±±			
	3/26	3½	14½	—	±±	++			
H. K.	1/ 7	1½	10¾	±	—	±±	3/15	Negative	
	2/27	3	14½	±±	—	±±			
	3/25	4	15½	++	—	±±			
P. U.	1/11	1½	8¼	±	—	+	2/29	Mild; healing	
	2/27	3	11	+	++	+	3/11	Spreading	
	3/26	4	12¼	+	++	+			
S. M.	1/20	2	13½	—	—	++	3/ 9	Negative	
	2/27	3	16½	±	±±	+			
	3/23	4	18	±	+	+			
G. D.	1/18	6	18½	—	—	+	3/ 9	Negative	
	2/27	7	19½	+*	—	+			
	3/26	8	20	±	—	+			
H. B.	1/18	1	6½	±	—	+	3/ 9	Negative	Negro
	2/27	2	8	±	—	+			
	3/26	3	10	—	—	+			
E. H.	1/18	1	8¾	—	—	+	3/11	Negative	Negro
	2/27	2	11¼	—	—	±±			
	3/26	3	12	—	—	+			
A. V.	1/15	6	15¾	+†	—	++	1/15	Negative	Porto Rican
	3/ 2	7½	17	±	—	±±	3/24	Negative	
D. B.	1/ 7	4½	11½	+*	+	++	3/14	Negative	
	3/27	6¼	13¾	+	—	++			
	3/23	7¼	14¾	+	—	±±			
M. K.	1/21	1	17¼	±	—	±±	1/25	Negative	
	2/29	2	20¾	±	—	±±			
	4/13	3½	22¼	±	—	+			
R. A.	1/23	3½	....	±	—	+	1/25	Mild	Premature
	3/ 4	5	....	+±	—	+	2/22	Healing	
							4/ 9	Mild	
								Slight healing	

* "Angular beading," not "rounded beading."
† Almost + beading.

The results were clear cut, as was the case last year, and may be summarized in a few words. Of the thirty-six babies that presented no evidences of rickets in January, all but one remained free from roentgenologic signs of rickets. The essential data of these infants are presented in table 1. The sole exception was, as might be supposed, a premature baby. This infant was cared for in the Home and weighed but 4½ pounds (2 Kg.) at birth and 6 pounds 5 ounces (2.8 Kg.) when it was 2 months old and first given irradiated milk. It grew with remarkable rapidity, especially in length, measuring 19 9/10 inches (50 cm.) at 2 months of age, 22 inches (55 cm.) at 3 months, 23 9/10 inches (60 cm.) at 4 months and 25 3/10 inches (63 cm.) at 6 months. As has been repeatedly emphasized, premature babies must be regarded as a distinct group that cannot be prevented from developing rickets by any antirachitic therapy, except perhaps by the use of exceedingly large amounts of viosterol. In connection with this study, it should be added that, although rickets was regularly warded off from a roentgenologic point of view, the development of craniotabes could not always be prevented nor the formation of a "rosary" (beading of the ribs). It is our experience, however, that these two lesions come about in spite of all antirachitic therapy—breast feeding and liberal doses of cod liver oil or of viosterol. The beading that develops is, however, not of high degree and is often "angular" rather than "rounded" in character.

The other and larger series consisted of infants in whom evidences of rickets were found at the outset. We had not intended to carry out an extensive curative experiment, but on examining the entire group in January it developed that fourteen showed definite signs of rickets by the roentgen rays and that forty-eight others presented clinical evidences of rickets, although characteristic signs at the epiphyses were lacking. Our therapeutic results, reproduced in table 2, with the treatment of "roentgenographic rickets" will be observed to have been highly satisfactory. Definite signs of healing were brought about within a month or six weeks even in Negro babies. This is well demonstrated in the accompanying illustrations.

The results in the larger group, which had merely "clinical rickets," in contradistinction to "roentgenologic rickets," were equally gratifying. The data of these cases are not presented in tabular form for lack of space and because curative effects cannot be satisfactorily demonstrated except in relation to objective evidence such as the roentgenogram. The criteria of healing were recession or angulation of the beading of the ribs, diminution of craniotabes, or intensification of calcification of the epiphyses. Once more it should be stated that the advance of craniotabes often could not be stayed, which was found to hold true even when a fortified cod liver oil was given. It should be emphasized that we have reference to the eradication of roentgenologic rickets, of rickets of moderate and severe degree, and that there is a very mild form characterized by definite but minor clinical manifestations which cannot be prevented by any of these antirachitic measures. As has been pointed out from time to time,[11] it is the realization of this fact, which must be evident to all who have closely followed the incidence of rickets in the clinic, that leads us to believe that in the etiology of this disorder there is a factor quite apart from a lack of vitamin D, a factor which has not yet been fathomed. Pfaundler[12] has expressed a similar view.

11. Hess, A. F., and Weinstock, Mildred: A Study of the Antirachitic Factor in Human and in Cow's Milk, Am. J. Dis. Child. **34**: 845 (Nov.) 1927.

12. von Pfaundler, M.: Neueres über Rachitis, München. med. Wchnschr. **74**: 659 (April 22); 721 (April 29) 1927.

Our observations may be summarized by the simple statement that milk irradiated in this way proved to be highly satisfactory in the treatment of rickets both from a prophylactic and from a curative point of view. As will be understood, it is not possible to draw a reliable comparison between the efficacy of activated milk and that of the "yeast milk" which was used in a similar study a year ago. It is certain, however, that the activated product was at least as efficacious. A more extensive experience, particularly one in which the two types of therapy are carried out at the same time and under similar clinical conditions, will be necessary in order to enable a more exact comparison.

In 1930 we reported clinical observations which showed that an assumption of this kind did not accord with the facts and that much more viosterol was needed to protect infants than would be expected, judging by bioassays of the two antirachitic agents.[1] It was suggested, therefore, that instead of making use of cod liver oil as the basis of unitage it would be preferable to express the potency of viosterol directly in terms of rat units. The investigation carried out in the clinic last year [2] clearly showed that this method, although useful for standardizing various preparations of viosterol, led to erroneous results when applied to a comparison of viosterol with "yeast milk" or with irradiated milk.

TABLE 2.—*Curative Effect of Pasteurized Irradiated Milk on Infants Manifesting Rickets by Roentgenogram*

				Physical Examination			Roentgenogram		
Name	Date	Age, Months	Weight, Pounds	Beading	Craniotabes	Bowing	Date	Rickets	Comment
E. H.	1/ 7	4½	13¼	+±	+	++	1/22	Moderate	
	2/23	6	14¾	+±	+±	++	2/23	Healing	
	3/23	7	16½	+±	+	+±	3/11	Marked healing	
							3/28	Healed	
J. B.	1/25	6	13	++±	++	++	1/25	Moderate	Porto Rican
	2/27	7	14½	++±	+±	++	3/ 2	Marked healing	
	3/26	8	15¼	++±*	—	++	3/15	Advanced healing	
							3/29	Advanced healing	
R. J.	1/ 8	3	14¾	+	±	++	1/17	Mild; healing?	
	2/23	4½	18½	+	++	++	2/23	Healed	
	3/22	5½	19¼	+	+	++	3/15	Healed	
G. M.	1/20	4½	13	+	++	+±	1/22	Moderate	Negro
	3/26	6½	14	±	—	+	2/23	Marked healing	
							3/23	Slight spreading	
C. H.	1/15	6	13½	++	—	++	1/17	Mild	Negro
	2/23	7	17	+	—	++	2/28	Marked healing	
	3/23	8	18½	+	—	++	3/18	Healed	
J. R.	1/20	7	16¾	+	—	+±	1/22	Rickets?	Porto Rican; grip, March 1
	2/23	8	17½	+±*	—	+±	2/23	Healing	
	3/28	9	17½	+±*	—	+±	3/18	Healed	
J. L.	1/ 8	3½	16¼	+±	+	++	1/18	Rickets?	Porto Rican
	2/23	5	19	+	++	++	2/25	Healing	
							3/25	Healed	
H. H.	1/ 8	3	8	+*	—	+	1/13	Rickets?	Porto Rican
	2/23	4	10	++	—	+	2/23	Healing	
							3/15	Healed	
R. K.	1/ 8	5	11	+	+	++	1/13	Mild; healing	
	2/23	6½	14½	+	—	++	2/23	Marked healing	
	3/23	7½	14¾	+*	—	++	3/18	Healed	
W. M.	1/11	2	11	+	+	+±	1/11	Rickets?	At first 18 ounces milk given; increased gradually to 32 ounces
							2/26	Healing	
	2/23	3½	14	+	+±	+±	3/18	Mild	
	3/26	4½	15	±	+±	++	4/ 1	Healing	
R. R.	1/11	5	14½	+	+	+±	1/11	Moderate; healing	Negro
	2/27	6½	16¼	+*	—	+±	2/26	Negative	
	3/23	7½	17½	+*	—	+±	3/15	Slight spreading	
J. A.	1/11	6½	15	+	+	++	1/15	Mild	Porto Rican
	2/27	8	17½	+	—	++	2/15	Healed	
	3/23	9	13¾	±	—	++±	3/18	Negative	
F. O'	1/11	4¼	16¼	+	+	+±	1/ 7	Mild; healing	Cod liver oil, 3 teaspoonfuls for two months prior to January
	2/27	6	17¼	+±	±	++	2/26	Healed	
	3/26	7	20	+	—	+±	3/21	Healed	
J. H.	1/21	13	18¾	++	—	....	1/21	Marked	1/20: Calcium, 9 mg., phosphorus, 2.7 mg.; 2/15: Calcium, 11 mg.; phosphorus, 6.3 mg.
	3/ 1	14	19½	++±	—	....	2/12	Healing	
							3/ 3	Healing marked	

* "Angular beading," not "rounded beading."

From the very introduction of irradiated ergosterol (viosterol) great confusion has been caused by uncertainties and difficulties in regard to the standardization of the product. In 1929 we expressed ourselves strongly against a standardization based on milligrams, in other words a gravimetric unit, and showed that a milligram of several preparations differed widely in strength. It was suggested that "the only way to make progress in the field so that irradiated ergosterol is rendered suitable for therapeutic use is to standardize preparations on the basis of animal tests." [1] Exception also has been taken to the method of expressing the potency of viosterol in terms of cod liver oil, because a method of this kind postulates that the activity of cod liver oil and viosterol is the same for infants as for rats. For example, the relative potencies, as expressed in rat units, of "yeast milk," of cod liver oil and of viosterol which were found to afford protection to infants was in the proportion of 1 : 1.25 : 5.2. These figures were based on giving a quart of "yeast milk," 3 teaspoonfuls of cod liver oil or 10 drops daily of viosterol, which, as far as can be judged, is preventive dosage of these three antirachitic agents; they represent approximately 160, 200 and 800 rat units. In other words, a smaller number of rat units of "yeast milk"—milk from cows that had been fed irradiated yeast—was required than of cod liver oil or of viosterol. At that time we did not wish to complicate the subject still further by raising the question of the position of irradiated milk in relation to unitage, contenting ourselves with a pre-

liminary statement to the effect that "irradiated milk is also exceptionally potent in regard to the number of rat units which it contains per liter." Our recent clinical and laboratory tests of milk activated by means of the carbon arc lamp, under controlled conditions, have strengthened the conviction that this product belongs in the category of yeast milk and cod liver oil rather than in that of viosterol. A quart, or even less, of this milk suffices to protect infants from rickets, notwithstanding the fact that this quantity contains

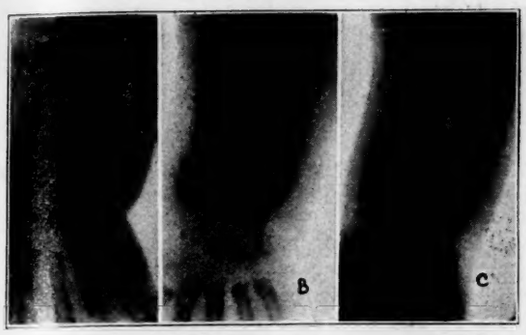

Fig. 1.—Therapeutic results with irradiated dry milk: *A*, Feb. 9 (begun); *B*, March 3 (three weeks later); *C*, March 24 (three weeks later).

only 50 units of vitamin D as assayed by the standard rat technic. Others have felt this discrepancy between laboratory standardization and the clinical results obtained with irradiated milk. Watson [13] attributes its effectiveness to the "vital" factor in activated milk, a certain something which is not measurable by the established laboratory tests. It is not possible, at the present time, to state in definite terms the nature of this distinction between various antirachitic agents. For the time being we must be satisfied with a realization of the existence of this peculiar biologic phenomenon, which is implicit with the inevitable conclusion that biologic assays, however valuable for a comparison of the potencies of antirachitic agents of the same kind, cannot be relied on in estimating the clinical value of antirachitic preparations as different as viosterol and irradiated milk.

Recently, Shelling and Asher [14] have expressed the opinion that it is "not reasonable" to assume that cod liver oil is more efficacious than viosterol in preventing infantile rickets. They base their conclusion on the fact that the antirachitic potency of these two therapeutic agents is comparable when tested on the rat. However, in view of the fact that the standard for viosterol is computed in terms of cod liver oil in one and the same animal, it is evident that this method of assay cannot be resorted to in determining whether these two agents vary in activity for infants. It is universally admitted that cod liver oil is definitely and notably more potent than viosterol in preventing leg-weakness in chickens. What we are interested in primarily is, of course, the action of these two substances in relation to the rickets of infants. In a report published about two years ago,[15] it was stated that to protect against or to cure infantile rickets about six times as much viosterol was required as cod liver oil. It may be added that subsequent experience has served only to fortify us in this conclusion. Such marked differences cannot be attributed to "different conditions of diet or environment." In the first place the environment of the infants in question was that of an institution and therefore eminently uniform. Secondly, the diet necessarily consisted either entirely or almost entirely of milk, which implies that, irrespective of dilution or formula, the Ca: P ratio was in all cases the same or almost the same. This holds true of the dietary of all infants about 3 or 6 months of age and is not disturbed significantly by the addition of the usual amounts of cereal or of vegetable. Moreover, the striking instance which we have cited of an infant which developed rickets, in spite of receiving twenty drops of viosterol daily, which is supposed to be the equivalent of ten teaspoonfuls of cod liver oil, but showed signs of healing after being given six teaspoonfuls of cod liver oil for a period of three weeks, is highly significant. Others have come to a similar conclusion in regard to the relative merits of these two valuable antirachitic agents. Shelling and Asher have demonstrated, however, that there is no distinction in antirachitic effect between cod liver oil and viosterol in the rickets induced in rats by means of a low phosphorus or a low calcium ration.

The number of antirachitic agents has grown so large that it would seem worth while to stop and pass them in review in an attempt to appraise their value in the prevention and cure of rickets throughout the community. The most outstanding are (1) irradiated milk, fluid and dry, (2) "yeast milk," (3) cod liver oil, (4) viosterol, (5) irradiated yeast, (6) direct ultraviolet irradiation, and concentrates and combinations of these products. It is evident that these various measures must differ not only in their specific virtue but also in their applicability according to whether one is considering individuals or a community, whether the community is rural or urban, and at all events according to the cost of the preparation.

Beginning with a consideration of irradiated milk, it should be emphasized that this therapeutic agent has two inherent advantages. First, in that milk is the

Fig. 2.—Therapeutic results with pasteurized irradiated fluid milk: *A*, Jan. 25 (begun); *B*, March 2 (five weeks later); *C*, March 15 (two weeks later); *D*, March 29 (two weeks later).

essential food for all infants, the indispensable and basal article of diet throughout the rachitic age, and furthermore in that, owing to its unequaled content of calcium and phosphorus, it is outstanding in connection with calcification. At the outset it should be mentioned that there does not seem to be any danger of giving excessive doses of any of these antirachitic preparations to the growing child. A series of recent biologic tests showed that 10,000 or 15,000 times the therapeutic dose of any of these five preparations could be fed to young rats without bringing about hypercalcemia; for

13. Watson, Chalmers: The "Vital" Factor in Diet: A Theory of the Nature of Vitamins, Edinburgh M. J. **38**: 91 (June) 1931.
14. Shelling, D. H., and Asher, D. E.: Bull. Johns Hopkins Hosp. **50**: 344, 1932.
15. Hess, A. F.; Lewis, J. M., and Rivkin, Helen: Newer Aspects of the Therapeutics of Viosterol (Irradiated Ergosterol), J. A. M. A. **94**: 1885 (June 14) 1930.

this purpose, of course, concentrates had to be prepared. Irradiated milk also has the advantage of being inexpensive. It is estimated that the additional cost of the activated milk which we fed this year was but one twenty-fifth of a cent per quart.

It is probably true that the use of this therapeutic method does not provide a constant intake of vitamin D. It should be added, however, that assays of irradiated milk, carried out in the course of the winter, have not shown significant variations in potency. Inconstancy of supply is an outstanding characteristic of the vitamins, for example of the antiscorbutic factor, which varies largely according to individual caprice, according to the consumption of fruits and vegetables. In respect to the antirachitic factor, which is furnished in largest measure by the rays of the sun and varies greatly from hour to hour, season to season and locality to locality, our daily quota is eminently capricious. This criticism of the product is, therefore, quite irrelevant. Nor is there the slightest basis for believing that, in the course of "flash irradiation" by a carbon arc, any harmful products are elaborated. As a substitute measure, the addition of irradiated ergosterol to milk has been suggested. This method would involve the danger of error at the dairies in the course of adding the supplement, and, furthermore, presupposes that irradiated ergosterol is maintained in uniform solution throughout the milk. Moreover, as stated, it necessitates, on account of the comparatively low "efficacy factor" of irradiated ergosterol, giving several times the number of vitamin units required when irradiated milk is given. It should be borne in mind that the addition to a food of crystalline vitamin D, however pure, has yet to be shown to possess any advantage over a similar food which has been activated by short exposure to ultraviolet radiations.

On the other hand, there are definite limitations to the adoption of irradiated fluid milk. It is clear that it is adapted for use in cities and cannot be prepared for rural communities. According to the latest census, almost one fourth of the population of the United States, in other words, 36 millions, live in cities of over 100,000 population. It is to communities such as these that a product of this kind would seem to be limited. In a city such as New York, where approximately 500,000 quarts of grade A milk is used daily and where four fifths of the milk of this grade is pasteurized in the city, there is an especially favorable opportunity to combine pasteurization and irradiation of milk for babies and children. It may be added that dry milk, milk dried by the roller process, was found last year to be very effective in protecting against or curing rickets and that this product maintains its potency for a period of many months. Irradiation could well be extended to evaporated milk which is given to babies on a large scale in small and distant communities where the need of antirachitic therapy is not realized and its application would be difficult.

Milk obtained from cows that are receiving large quantities of irradiated yeast ("yeast milk") is likewise of value in the prevention of rickets. During the past year this measure has been used at certified farms in New York, Boston and Philadelphia and is about to be adopted elsewhere. It is a measure that is especially applicable to the certified farm where the ration of the cows is thoroughly controlled and one can be certain that a potent yeast is fed in proper amount and, more particularly, where frequent biologic assays of the milk can be carried out. Perhaps its application can be somewhat extended to grade A farms which provide a milk that is not certified and is much less expensive. It should be added that during the past winter we continued a certain number of infants in the baby health station on "yeast milk" for the second year and found that they thrived excellently, that none of them developed rickets in the course of the winter, and that the bones showed excellent calcification on roentgenologic examination.

Cod liver oil, like the antirachitic milk preparations, is reliable in preventing rickets excepting in its mildest form. It has been especially recommended on account of its high content of vitamin A, which by some has been termed and regarded as the "antiinfective vitamin." Without entering into a discussion of this subject, which has been considered elsewhere, it should be stated that this term is a misnomer, as neither vitamin A nor cod liver oil is able to prevent respiratory infections. Moreover, grade A and the better grades of milk contain from 1,000 to 2,000 vitamin A units per quart, which should be a sufficiency of this nutritional factor. Possibly cod liver oil contains some factor of which we are not yet cognizant—a possibility which has been referred to elsewhere but which cannot be stated more definitely as the result either of clinical observation or of laboratory test. The main disadvantage of cod liver oil, which has stood in the way of its general acceptance by mothers and children, is its disagreeable taste and odor.

The most potent of all antirachitics is viosterol. It should therefore be singled out for the cure of rickets and for its prevention in the premature infant, which often resists all other measures and is a disorder quite outside the ordinary category. Like cod liver oil, irradiated dry milk and viosterol are suited especially for the rural community in which irradiated milk or "yeast milk" is not applicable. Communities of this kind, containing less than 2,500 inhabitants, harbor 53 of the 122 million total population of the United States.

Irradiated yeast, which one of us recommended some five years ago,[16] has been used to only a small extent. Its disagreeable taste is most difficult to disguise. It is possible that this antirachitic agent or viosterol will be found suitable for nursing mothers in order to protect their infants from rickets and to prevent the withdrawal of lime from the bones, a reaction so commonly associated with lactation. However, if available, irradiated milk would be preferable for this purpose, owing to the fact that it provides an additional quota of calcium and phosphorus. In general the indirect rather than the direct method of therapy is preferable for nursing babies, because of the advantage to the mother as well as to the child. In the plan for the prevention of rickets, provision must be made for the nursing baby, for this disorder is by no means uncommon in the nursling. If mild "clinical rickets" is included, from one fourth to one third of all nursing infants manifest signs of this disorder.

Unless direct ultraviolet irradiation can be provided in an inexpensive and practical form combined with illumination, this method cannot be considered in the protection of the community at large from rickets. It is a valuable and effective measure and has value in the protection and cure of individuals, but at present it is limited in application owing to the fact that it requires the use of special apparatus.

16. Hess, A. F.: Antirachitic Activity of Irradiated Cholesterol, Ergosterol and Allied Substances, J. A. M. A. 89: 337 (July 30) 1927.

We have confined ourselves in this discussion to the prevention of rickets in infants during the first and second years of life. It is becoming increasingly evident, however, that an antirachitic supplement is required throughout childhood, the period when there is not only marked growth in weight but in stature, in the growth and development of the bony skeleton. Whether antirachitic agents, such as activated food or ultraviolet radiation, are required for the best health and nutrition of the adult is a question which cannot be as yet satisfactorily answered.

There is another subject which, although somewhat afield, may well be mentioned in this connection; namely, the all important question of whether there is any cause for alarm in the rapidly increasing multiplication of foods which have been fortified with antirachitic vitamin. Antirachitic bread, vegetables and other foods have made their bow. It is true that the diet of children is lacking in this nutritional factor, but it may be asked whether this vitamin should be introduced at random and taken without medical advice and the knowledge or understanding of the parents. Incidentally, this raises the question, which we shall not discuss, of the desirability of adults partaking indiscriminately of foods rich in vitamin D. Besides the necessity for control of the potency of these products, which probably will be within therapeutic bounds unless some error occurs in the course of preparation, it may be questioned whether federal license and supervision should be required before such antirachitic foods are allowed to be marketed. This is a matter which is at present not under the jurisdiction of any bureau.

CONCLUSIONS

1. Pasteurized milk was activated by means of carbon arc rays, the radiant energy being carefully controlled and measured. It was found that sixteen seconds' exposure was sufficient to render the milk highly antirachitic.

A clinical test of this product in the prevention and cure of infantile rickets demonstrated that it is a highly effective antirachitic agent which can be relied on. Less than one quart daily sufficed to protect even Negro infants.

The great advantage of using activated milk, both fluid and dry, in the prophylaxis of rickets is that this measure furnishes an automatic method of therapy and likewise provides calcium and phosphorus.

2. Laboratory tests of this milk showed that it contained a comparatively small number of antirachitic units as judged by the standard rat assay. In view of the excellent clinical results, it is evident that the established method of assay cannot be relied on to appraise the value of irradiated milk for infants. This discrepancy in standardization was found also to hold true for tests of milk from cows which had been fed irradiated yeast ("yeast milk").

3. The indications for various antirachitic agents are discussed and appraised of (1) irradiated milk, fluid and dry, (2) "yeast milk," (3) cod liver oil, (4) viosterol, (5) irradiated yeast, (6) direct ultraviolet irradiation. Some of these measures are of value in the prevention and others for the cure of rickets, some for urban and others for rural communities. The use of irradiated fluid milk probably will be restricted to cities.

16 West Eighty-Sixth Street.

Clinical Notes, Suggestions and New Instruments

THE SAFETY NEEDLE

ROBERT J. LOWRIE, M.D., NEW YORK

During an operation the needle with which the surgeon sews may break, and even after a painstaking search the broken piece cannot always be recovered from the tissue. A needle may break in the most skilled hands. Nevertheless, the patient and relatives are not often ready to excuse the surgeon, and the latter may spend wakeful nights conjecturing what further trouble might be caused by the piece of steel left in the patient's body and whether he is to face a malpractice suit for alleged neglect.

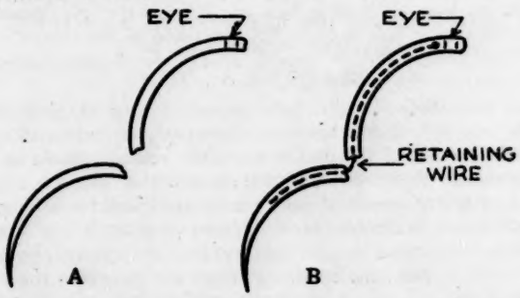

Fig. 1.—*A*, ordinary needle, broken; *B*, safety needle, broken.

Over a period of three years in the state of New York, there were at least fifteen claims brought against physicians because of fragments of broken needles being left behind after an operation. Even though the unfortunate physician is not "sued," his conscience bothers him and his reputation is liable to suffer.

In order to prevent the fragment of a broken needle from being lost in the tissue, I have designed a needle, which, if broken, controls or anchors the broken piece and so allows this to be readily and easily recovered from the tissue.

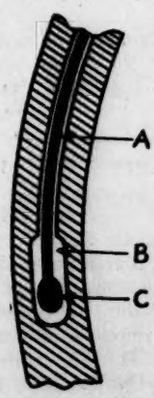

Fig. 2.—Enlarged section of safety needle, showing end of retaining wire in place: *A*, retaining wire; *B*, recess to allow play in retaining wire in case of bending or breaking of needle; *C*, enlarged end of retaining wire.

In figure 1 *A* is shown the ordinary surgical needle broken. The fragment with the point-end is completely detached and hence may "wander" afar in the flesh.

In figure 1 *B* is shown the safety needle broken, the fragments being held together by a retaining wire. The fine retaining wire runs from the eye for not less than two thirds of the length of the needle and is completely enclosed in a moisture-proof lumen or tunnel (fig. 2). Each end of the lumen is slightly enlarged to form a recess in which is confined the end of the wire, also enlarged by having its end turned back on itself. The retaining wire is not fastened to the walls of the lumen but may slide lengthwise for a distance of from 1 to 2 mm. This limitation of movement of the retaining wire is due to the inability of the enlarged ends to escape from the recesses into the lumen. Hence, when the needle breaks in the part containing the wire, the fragment of steel separates slightly (1 to 2 mm.) but is attached by the intact wire to the other part of the needle, which, of course, the surgeon controls.

A needle breaks at the point of greatest strain or leverage and this is usually where it is grasped by the needle holder.

On the first grasp, when the point of the needle is being forced through the tissue, the place of possible breakage is in the proximal half, usually a centimeter or two below the eye. If the break is below the surface of the tissue, the buried piece can be located by blunt dissection, the portion of the needle above the surface acting as a guide.

Occasionally when the needle holder is too close to, or right over, the eye, the break may be through the eye. As this is at the very end of the needle, only a tiny piece of metal is detached and quite often this can be located. But this type of break will not occur if the operator will keep the needle holder a half centimeter or so away from the eye.

The second grasp of the needle is in its distal third, near the point, when the other end of the suture is being drawn through the tissue. This portion of the needle does not contain the wire, but if the break occurs here the distal fragment is controlled by the needle holder and the proximal fragment is "tethered" to the suture. Therefore both fragments can be readily withdrawn from the tissue.

When the safety needle is used the following precautions should be observed:

1. The needle holder, when grasping the proximal end of the needle, should be at least 0.5 cm. away from the eye.

2. Make sure that the end of the short piece of suture is always at least 2 or 3 inches away from the eye, especially when the needle holder is on the point-end of the needle.

3. The needle holder should always be locked, especially when used on the point-end of the needle.

4. If the needle breaks, jerking, twisting or tugging should not be resorted to, but by blunt dissection, or cutting if necessary, the portion of the needle above the surface should be used as a guide to locate the buried fragment.

5. The safety needle should not be sterilized by boiling, but by immersion in alcohol, as in the case of scalpels and scissors.

Lumbar puncture needles and needles for giving clyses can have built in them the retaining wire, and so utilize the safety principle.

The safety device has thus far been employed in just one type of needle, the medium size, round needle. As time goes on the safety principle will be used in larger, or even smaller needles, either round or cutting.

In the early stages of development of the needle, I used for the "proving ground" a piece of tough beef, having deliberately broken several needles in order to note the usual point of breaking and also to get practice in recovering the fragment. Many of my colleagues have already used the safety needle and I have been using it for some time in my own private practice and in the ward cases.

The safety needle is identified by a small circle on the concave surface near the eye.

130 East Fifty-Sixth Street.

POISONING BY "EXLAX" TABLETS

MONTAGUE CLEEVES, M.D., LA CRESCENTA, CALIF.

A healthy American boy, aged 10 years, ate the contents of a box of "Exlax" tablets in mistake for candy, March 26, 1932. He suffered severe purgation and his temperature rose to 106 F.; as household remedies failed to reduce this, the doctor was called the following evening. The only symptoms present were the temperature, 106, and a pulse of 130. The urine showed nothing abnormal. Fever persisted. On the 30th, a sudden eruption of huge wheals with sharply marked serpiginous borders appeared on the abdomen, legs and arms, disappearing the following day. Next day hemiplegia was apparent and the child became delirious. Multiple petechiae appeared on the abdomen and subcutaneous hemorrhages on the feet. A temperature of 103 persisted. Coma supervened, with gradual failure of respiration, and the child died at midnight, April 4, nine days after taking the "Exlax" tablets.

Necropsy showed a great number of hemorrhagic areas through the length of the intestine, varying in size from minute to several square centimeters, multiple minute hemorrhages in the kidneys, liver and brain substance, and marked congestion of the meninges (spinal puncture had shown a sterile lymphocytosis). The spleen was about four times the normal size and of mushy consistency, and was a very dark red. The heart walls showed multiple minute hemorrhagic areas and infarcts in the aortic valves (a few days before death a pronounced aortic murmur was audible); the suprarenal glands were almost liquefied.

The picture was one of a general destruction of the endothelium of the blood vessels, and the question arises whether a transfusion of blood might have been efficacious.

The active factor in "Exlax" is stated to be phenolphthalein. The literature reports occasional misadventures.[1]

5347 North Briggs Avenue.

INHALATION OF CARBON DIOXIDE IN THE PAROXYSMAL STAGE OF PERTUSSIS

YANDELL HENDERSON, PH.D., NEW HAVEN, CONN.
From the Laboratory of Applied Physiology, Yale University.

Inhalation of carbon dioxide, diluted in air or oxygen, is now established as an effective means of overcoming atelectasis and preventing pneumonia in the new-born, as well as for the reinflation of the lungs and prevention of pulmonary complications after anesthesia.

It seemed promising, therefore, to try a similar treatment in the paroxysmal stage of whooping cough. The object in this case is, however, not merely to forestall the risk of pneumonia but also to diminish the intensity and abbreviate the duration of the paroxysmal period. Pneumonia after pertussis probably comes from the obstruction of bronchi or bronchioles by mucus (Coryllos). The cough and whoop are due to irritation by adherent particles of mucus. Clearing the lungs by deep breathing should not only prevent pneumonia but also have the immediate advantage of diminishing the paroxysms of coughing. The object of this inhalation is, then, to keep the lungs sufficiently clear so that the paroxysms may be appreciably diminished in frequency and in intensity.

Experience shows that the inhalation of from 6 to 7 per cent carbon dioxide does not itself precipitate a paroxysm, as might perhaps have been expected. In some cases in which the child is uncooperative or resentful of any handling, a paroxysms may develop at the moment that the mask or hood is placed over the face. In these cases it is best, and indeed necessary, to delay the inhalation until that paroxysm is past; then it is recommenced and generally goes smoothly. The period of inhalation has been from ten to fifteen minutes either once or twice a day, preferably before a meal, or at least two hours after the last meal. The pulse is not considerably accelerated and breathing does not exceed that of a healthy child after a moderate amount of exercise. It is the depth rather than the rate that is increased. In this treatment, as in all uses of carbon dioxide, the percentage of the gas in the air, or oxygen, inhaled should be below the amount that would increase the rate of breathing or cause anxiety or strain in the patient. Under higher concentrations the depth of breathing may even decrease. Between 6 and 7 per cent mixed with air, or a mixture of 7 per cent carbon dioxide and 93 per cent oxygen, has been found to fulfil the requirements.

In some cases the mixture of carbon dioxide in oxygen has been administered by means of a mask and rubber bag. For this purpose the inhalator now commonly used by rescue crews for the treatment of cases of carbon monoxide poisoning is most convenient. Any one of the standard anesthesia machines affords the same conditions for the patient but they are more expensive. The portable infant inhalator now widely used for the resuscitation of the new-born from asphyxia or persistent atelectasis has also been found to be well adapted for this purpose.

In other cases, especially for children who objected to the mask, a small tent has been used having a capacity of about one cubic foot. Into the top of this tent a stream of carbon dioxide mixed with air is delivered through an injector. The gas comes from a cylinder of pure carbon dioxide to which are attached a reducing valve, a finely adjustable needle valve, and a manometer that blows off at a pressure of 8 inches water gage, this blow off preventing the possibility of excess. The injector in the top of the tent is adjustable to give a concentration of from 4 to 8 per cent carbon dioxide and a flow of more than 20 liters of the air and carbon dioxide mixture into

1. Phenolphthalein Poisoning with Analax Tablets, J. A. M. A. 98:340 (Jan. 23) 1932. McCarthy, F. P.: Dermatitis Medicamentosa (Phenolphthalein), Arch. Dermat. & Syph. 25:1142 (June) 1932.

the tent each minute. This apparatus has been left in the home and used by the child's mother or nurse. The cost of the gas is much less than when a mixture of carbon dioxide and oxygen is used, and the effects on the patient appear to be the same.

This treatment has now been applied to ten children, ranging in ages from 9 months to 7 years. All of them were suffering from frequent and distressing paroxysms of coughing. In all cases after the third or fourth day of inhalation the paroxysms were considerably lessened in severity and frequency. By the end of the eighth day coughing had become so infrequent that the inhalations were then discontinued.

4 Hillhouse Avenue.

Committee on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

SCHULZ PAN DANDY BREAD
SCHULZ BAMBY BREAD (SLICED AND UNSLICED)

Manufacturer.—Schulz Baking Company, Pottstown, Pa.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817); prepared from patent flour, water, malt extract, yeast, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride, and potassium bromate, salt, sucrose, hydrogenated shortening and dry skim milk.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	34.2
Ash	1.7
Fat (ether extraction method)	0.8
Protein (N × 6.25)	10.3
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	52.7

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

COMET BROWN RICE FLAKES
Flaked Genuine Brown Rice
(Flavored with malt, sugar and salt)

Manufacturer.—Comet Rice Company, New York.

Description.—A flaked cooked and toasted brown rice containing added malt syrup, salt and sugar.

Manufacture.—Cleaned whole brown rice, malt syrup, salt and sugar are cooked under steam pressure for one hour in a revolving sealed cooker. The cooked material is partially dried, flaked between steel rolls, toasted and packed in paper cartons.

Analysis (submitted by manufacturer).—

	per cent
Moisture	4.4
Ash	2.5
Fat (ether extract)	0.9
Protein (N × 6.25)	8.4
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	83.0

Calories.—3.7 per gram; 105 per ounce.

Claims of Manufacturer.—A ready to eat brown rice cereal.

HARDY'S TWIN LOAF BREAD

Manufacturer.—Hardy Baking Company, Flint, Mich.

Description.—A white bread made by the sponge dough method (method described in THE JOURNAL, March 5, 1932, p. 817) prepared from patent flour, water, yeast, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, salt, dextrose, lard, partially hydrolyzed starch and a mixture of calcium acid phosphate and calcium peroxide.

Analysis (submitted by manufacturer).—

	per cent
Moisture (entire loaf)	36.8
Ash	0.6
Fat	1.2
Protein (N × 6.25)	8.4
Crude fiber	0.2
Carbohydrates other than crude fiber (by difference)	52.8

Calories.—2.6 per gram; 74 per ounce.

Claims of Manufacturer.—A bread of good quality.

REPORTS OF THE COMMITTEE

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HERTWIG, Secretary.

CONDAY (GRAPE AND RASPBERRY FLAVORS)
Makes a Delicious Spread; Use in Place of Old Fashioned Jelly
NOT ACCEPTABLE

Thomson & Taylor Company of Chicago submitted to the Committee on Foods two products called "Conday Grape Flavor" and "Conday Raspberry Flavor." The grape flavor product contains water, fruit pectin, tartaric acid, natural grape flavor, grape juice, potassium bicarbonate, dextrose, sucrose and artificial food color certified by the United States Department of Agriculture. The raspberry flavor product is of essentially the same composition excepting that concentrated raspberry juice and natural raspberry flavor are the flavoring ingredients.

Analysis (submitted by manufacturer).—

(Grape flavored)

	per cent
Moisture	91.2
Ash	0.3
Fat (ether extract)	0.2
Protein (N × 6.25)	0.2
Crude fiber	0.0
Pectin	1.9
*Dextrose (polarization method)	2.1
*Invert sugar (polarization method)	3.5

(Raspberry flavored)

	per cent
Moisture	92.5
Ash	0.3
Fat (ether extract)	0.1
Protein (N × 6.25)	0.1
Crude fiber	0.0
Pectin	1.7
*Invert sugar (polarization method)	1.8
*Dextrose (polarization method)	1.2

* C. A. Browne, Sugar Analysis (1912).

Discussion of Label.—A cursory reading of the label gives the impression that the article itself is the "delicious spread" mentioned. Only after reading the rear label panel is the fact disclosed that a large quantity of sugar must be added and the "spread" prepared according to certain directions. The prominent statement "Contains only pure fruit products" incorrectly implies that all the ingredients are derived from fruit. This statement in conjunction with the facsimile of fruits including grapes, oranges, lemons and an unidentified fruit suggests the presence of the whole juice of the fruits, which is not correct. The potassium bicarbonate, sucrose and dextrose ingredients are not derived from fruits. The unqualified prominent statement "Use in place of old fashioned jelly" creates the unwarranted and misleading impression that the article is closely similar to what is popularly recognized as "old fashioned jelly."

In accordance with its published Rules and Regulations, the Committee recommended to the manufacturer that a descriptive statement naming the ingredients of the product be placed in proximity to the trade name Conday on the label and in advertising; the intent of the statement being to identify the article and to prevent possible deception or false implication that the product or the "spread" made from it is "true jelly" a generally recognized "all-fruit-juice sugar preparation."

The manufacturer was informed of the opinion and recommendations of the Committee but has shown no indications of complying with the Committee's recommendations. These products, therefore, cannot be listed among the Committee's "accepted" foods.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 20, 1932

CRYSTALLIZED FILTRABLE VIRUS

Possibly the reported successful crystallization of the etiologic factor of mosaic disease of tobacco may be regarded by future medical historians as one of the most important advances in infectious theory since the work of Lister and Pasteur. The announcement of the isolation of a crystallizable pathogenic enzyme necessarily throws doubt on the conception that poliomyelitis, smallpox and numerous other "ultramicroscopic infections" are of microbic causation. The apparent evidence that a specific protein, which in itself is incapable of self multiplication, may function as a disease germ when placed in "symbiosis" with normal cells seems to furnish experimental confirmation of several highly speculative theories relating to vitamins, hormones and progressive tissue degenerations.

The enzymic theory of the etiology of tobacco mosaic disease was suggested by Dr. A. F. Woods [1] more than thirty years ago. Since then the enzyme concept has remained the dominant working hypothesis in the experimental pathology of this and certain other plant diseases.

Subsequent extraction and preservation of the mosaic infectious agent by means of glycerin, the demonstration of its resistance to phenol, heat and ultraviolet rays, its precipitation by alcohol, acetone and other protein precipitants, its adsorption and subsequent elution from talc, and its partial isolation by electrodialysis have all been consistent with but not proof of its assumed enzyme character. Ten years ago, measurements of the diameter of this infectious colloid led Duggar and Armstrong [2] to the conclusion that each pathogenic unit is of the approximate size of a hemoglobin molecule. This is an order of magnitude similar to that subsequently demonstrated for "bacteriophage" and for numerous known plant and animal enzymes.

Recent studies of the hydrolytic products of this infectious colloid by Dr. C. G. Vinson and his co-workers [3] of the Boyce Thompson Institute for Plant Research, Yonkers, N. Y., have confirmed these observations and have led to the belief that the active component of the mosaic protein is a relatively simple atomic group, of which the infectious protein as a whole is a presumably necessary but relatively inert colloidal "carrier." This concept is in harmony with the accepted theory of known enzymes. From their relatively pure acetone precipitates from mosaic juice the New York plant pathologists finally succeeded in obtaining colloidal crystals, which were uniform in appearance and moderately infectious. They retained much of their infectivity on recrystallization. This decreased infective potential is in line with the progressively decreasing hydrolytic potential on recrystallization of known enzymes.

The essential problem before plant pathologists today is a determination of the ways in which such a pathogenic enzyme can initiate progressive enzymic perversion in living cells giving the appearance of enzymic self proliferation. This is similar to the essential problem of the new colloidal theory of "bacteriophage" and of numerous alleged "type transformations" in associated micro-organisms. An analogous problem is shown in the postulated quasiproliferating "pathogenic hormones" in certain progressive parenchymatous degenerations. These and numerous similar problems have already stimulated the speculative interest of biochemists. By a proper juggling with known chemical facts, Alexander [4] finds it logical to picture engrafted enzymic colloids functioning as "induced" or "modified genes" in "symbiosis" with living cells. The quasiproliferating "genetic perversion" causes atypical morphology and altered physiologic function. In extreme cases it may lead to the death of the perverted cell or of the multicellular host.

Clinicians must be prepared for the future endorsement of such metaphysical fantasies by medical investigators with the serious advocacy of their acceptability as working hypotheses in practical medicine.

1. Woods, A. F.: Centralbl. f. Bact. **5**: 745, 1899.
2. Duggar, B. M., and Armstrong, J. K.: Ann. Missouri Botan. Gard. **10**: 191, 1923.
3. Vinson, C. G., and others: Contributions from Boyce Thompson Institute **3**: 131, 147, 1931; Botan. Gaz. **87**: 14, 1929.
4. Alexander, Jerome: Protoplasma **14**: 296, 1931.

PROTEINURIA IN YOUNG WOMEN

The appearance of protein in the urine of apparently healthy young persons has been the subject of much study and considerable conjecture. THE JOURNAL [1] has pointed out the importance of investigations of this problem from the point of view of the possible early recognition of renal disorder. The incidence of benign, non-nephritic, orthostatic, lordotic or postural albuminurias is about 5 per cent. This figure applies to young men only, and it varies somewhat depending on the method used in testing the urine. Among the etiologic factors involved in these cases of "physiologic

1. Albuminuria in Young Men, editorial, J. A. M. A. **98**: 1470 (April 23) 1932.

proteinuria" it is well known that circulatory conditions are important. Thus, during strenuous exercise, which is known to provoke or aggravate proteinuria, the blood is largely diverted to the muscles and the skin. The kidney secretes little urine, which may contain albumin as the result, presumably, of local anoxemia rendering the glomerular endothelium permeable to the plasma proteins.

Hellebrandt and her collaborators [2] at the University of Wisconsin have studied the relation of exercise to the excretion of protein by healthy young women. The subjects were physical education students and instructors ranging from 18 to 30 years of age. In forty-seven cases, seven, or 14.8 per cent, showed albuminuria. The urine samples were tested either with heat and acetic acid or with sulphosalicylic acid. Because these reactions are apparently more sensitive than the nitric acid ring test, it is probable that the demonstrated incidence of proteinuria in young women is about the same as that found by previous workers for men. Of the forty subjects whose urine was protein free, twenty-three, or somewhat over 50 per cent, showed some albuminuria after exercising in the gymnasium. A special study was therefore made in an attempt to correlate the effect of exercise on pulse pressure and on the presence or absence of protein in the urine. After riding the bicycle ergometer for thirty minutes, six subjects out of fourteen showed albuminuria. The average blood pressure of this group fell after exercise to 21 mm. below the preexercise level and did not return to normal until after seventy-two minutes. The eight subjects whose urine remained protein free showed a less marked drop in blood pressure, or 11 mm., and a return to normal in fifty-one minutes. Thus, the authors believe that the possibility of a sluggish circulation after exercise augments the local asphyxia of the kidney and contributes to the renal excretion of protein. Albuminuria was produced in those subjects who exhibited an excessive peripheral dilatation during exercise, as evidenced by flushing and sweating, and a deep and protracted fall in blood pressure after the cessation of exercise.

Further experiments indicate an interesting relationship between the speed of performing vigorous work and the quantitative excretion of protein. By means of a specially constructed bicycle ergometer with an electrodynamic brake it was possible to perform identical amounts of absolute work in a given length of time at speeds that could be varied within wide limits. Pedaling at the rate of 65 revolutions per minute and doing exhausting work for five minutes, five subjects eliminated an average of 4 mg. of protein per hundred cubic centimeters of urine. This is an almost protein-free secretion. Increasing the speed to 95 revolutions but maintaining the amount of external work constant in the same time period, these subjects showed an average excretion of 73 mg. of protein per hundred cubic centimeters of urine. The blood pressure rise during exercise and fall after its completion was nearly identical in the two experiments; hence it was not the important factor involved in the development of this proteinuria. It is known, however, that the amount of energy required to perform rapid work is more than for slower work, because of the increased frictional loss in the muscles, and the oxygen requirements are higher. The authors believe that their results may be explained on the hypothesis that violent exercise involving rapid movements brings about a generalized systemic increase in acidity. Should this condition alter the permeability of the glomeruli, protein might appear in the urine.

These experiments thus afford additional data relating the circulation with kidney function, and they offer interesting possibilities for future study. Though the significance of albuminuria in young adults still remains obscure, the contribution of the Wisconsin physiologists further elucidates some of the factors involved.

2. Hellebrandt, Frances A.: Studies on Albuminuria Following Exercise: I. Its Incidence in Women and Its Relationship to the Negative Phase in Pulse Pressure, Am. J. Physiol. **101**: 357 (July) 1932. Hellebrandt, Frances A.; Brogdon, Elizabeth, and Kelso, L. E. A.: II. Its Relationship to the Speed of Doing Work, Am. J. Physiol. **101**: 365 (July) 1032.

THE PREPOTENT FUNCTION OF THE SUPRARENALS

The great interest that has developed in the function of the suprarenal structures is thoroughly justified. The discovery of the indispensability of the suprarenals for life was, of itself, sufficient to promote the study of "these hitherto mysterious bodies." The demonstration that the cortex of the suprarenals is the part that has dominant importance for the body has diverted much of the investigation in this field away from the medullary part of the glands, which only a few years ago yielded the potent hormone epinephrine to science. Indications of the possibility of replacement therapy by means of suitable cortical extracts have acted as additional spurs to the laboratory workers in this field of endocrinology. To cap the climax, the growing evidences of the possible value of the cortical hormone in the management of that heretofore discouraging condition, Addison's disease, has awakened even the clinicians to the necessity of a vigorous study of suprarenal functions from every angle.

There is, indeed, danger that the pendulum of enthusiasm may momentarily swing too far in one direction, as so often happens when new discoveries are made. This is intimated in a recent paper in THE JOURNAL,[1] in which the following statements appeared:

> A limited amount of additional information has been gained during the eighty years since Addison first published his description of the disease which now bears his name, despite the production of a vast literature. One of the significant things, now apparently established, is that the essential patho-

1. Harrop, G. A., Jr., and Weinstein, Albert: Addison's Disease Treated with Suprarenal Cortical Hormone (Swingle-Pfiffner), J. A. M. A. **98**: 1525 (April 30) 1932.

logic process in the disease lies in the cortical portion of the suprarenal gland and not in the medulla. It is by no means proved, however, that direct or indirect impairment of function in the medulla is not responsible for certain of the characteristic clinical phenomena, particularly the pigmentation, the hypotension and the disturbance of sugar metabolism. The predominant rôle of tuberculosis as the etiologic factor in about 80 per cent of the cases, and of a peculiar atrophy of the glands in nearly all the remainder, has also been established. Finally, the remarkable tendency of the clinical course of the disease to remissions and relapses is now clearly evident.

In reviewing the recent progress, Britton[2] has remarked that the development of a potent organ extract invariably signalizes an outburst of experimental work in the pertinent field, which is perhaps fortunate. Hope is thus engendered that suprarenal physiology may soon be stripped of much of its hazy theory and form a well founded part of the endocrinologic scheme. The most recent contributions from Britton's laboratory[3] at the University of Virginia direct attention anew to the probable relations of suprarenals to carbohydrate metabolism. The augmentation of blood urea, often referred to in cases of suprarenal deficiency, is not believed by the Virginia physiologists to be of primary significance but rather the expression of effects indirect or secondary to more fundamental changes. Among these are the progressively severe reductions in the sugar content of the blood, and in liver and muscle glycogen stores, in animals deprived of their suprarenals. Hence Britton and Silvette believe that the cortex is indispensably important in maintaining, in cooperation with other organs, the normal metabolism of carbohydrates in the body. The evidence indicates that this represents the principal function of the corticosuprarenal tissues. The results appear significant, they add, in view of the severe myasthenic condition found in Addison's disease, and also in relation to the recently observed effects of corticosuprarenal extract in stimulating energy output. Administration of corticosuprarenal extract brings about recovery of animals which are in the terminal stages of insufficiency, apparently through initial restoration of normal carbohydrate values. Increments in circulating sugar to the normal or even to hyperglycemic levels occur early after injection of the extract and are invariably associated with the disappearance of symptoms of insufficiency. There are also correlated and striking increases in liver glycogen. These conditions appear to be of primary importance in effecting recovery. Restoration is completed with the reestablishment of muscle glycogen values and the diminution of lactic acid in the blood. That is why Britton and Silvette venture the conclusion that the cortical tissues and their hormones are primarily concerned (in conjunction admittedly with other secretions) in the maintenance of normal dextrose and glycogen levels in the body. Since the cortex represents that part of the organs which is preeminently essential to life, the conclusion is derived that the regulation of carbohydrate metabolism may be considered as the prepotent function of the suprarenal glands.

2. Britton, S. W.: Adrenal Insufficiency and Related Considerations, Physiol. Rev. **10**: 617 (Oct.) 1930.

3. Britton, S. W., and Silvette, H.: The Apparent Prepotent Function of the Adrenal Glands, Am. J. Physiol. **100**: 701 (May) 1932.

VITAMIN C—THE ANTISCORBUTIC VITAMIN

Ever since the discovery of the existence of vitamins as heretofore unrecognized dietary essentials, serious attention has been directed toward ascertaining the precise chemical nature of these indispensable food factors. For a long time our knowledge was confined to an appreciation of the indisputable fact that many natural foods exhibit vitamin potencies and that the latter can be concentrated to a noteworthy extent by suitable biochemical procedures. One outcome of such investigations has been the development of useful vitamin concentrates of various sorts. It has become well established that the known vitamins cannot be produced de novo by the animal organism. The latter is dependent, in ultimate analysis, on plants for the genesis of vitamins. Bacteria also apparently have some capacity to synthesize some of them. In all these studies the research worker has been compelled to rely on tests with animals to ascertain the existence and potency of vitamins in the products studied, for the chemical structure of the effective agents remained unknown and consequently they could not be assayed by the method conventionally employed with most physiologically active substances of recognized make-up.

Of late, progress toward the isolation and identification of some of the vitamins has been greatly accelerated.[1] The discovery that the irradiation of a known substance, ergosterol, leads to the production of vitamin D, the antirachitic factor, was followed by the preparation of crystalline vitamin D. Another significant discovery was the determination that one of nature's common yellow pigments, carotene, can serve as a precursor of vitamin A in the body. Within the past year have come reports of the isolation or identification of vitamins A, B and C by Karrer or Drummond, Windaus and Rygh, respectively.

According to Rygh and his co-workers,[2] the antiscorbutic vitamin can be produced from the long known alkaloid narcotine and is presumably so derived in nature. Unfortunately, the experimental results and conclusions of these Scandinavian investigators have failed of confirmation by a number of scientific workers

1. Mendel, L. B.: Vitamin A, J. A. M. A. **98**: 1981 (June 4) 1932. Eusterman, G. B., and Wilbur, D. L.: Clinical Features of Vitamin A Deficiency, ibid. **98**: 2054 (June 11) 1932. Kruse, H. D., and McCollum, E. V.: Review of Recent Studies on the Antineuritic Vitamin, ibid. **98**: 2201 (June 18) 1932. Cowgill, G. R.: Vitamin B_1 in Relation to the Clinic, ibid. **98**: 2282 (June 25) 1932. Sure, Barnett: The Present Status of Vitamin B_1 (G), ibid. **99**: 26 (July 2) 1932. Underhill, F. P.: Clinical Aspects of Vitamin G Deficiency, ibid. **99**: 120 (July 9) 1932. Clouse, Ruth C.: Vitamin D, ibid. **99**: 215 (July 16), 301 (July 23) 1932. Schlutz, F. W.: The Clinical Significance of Vitamin D in Infancy and Childhood, ibid. **99**: 384 (July 30) 1932. Evans, H. M.: Vitamin E, ibid. **99**: 469 (Aug. 6) 1932. Harris, L. J., in Annual Review of Biochemistry, Stanford University Press **1**: 337, 1932.

2. Rygh, Ottar; Rygh, Aagot, and Laland, Per: Ztschr. f. physiol. Chem. **204**: 105 (Jan. 5) 1932.

both here and abroad.[3] Better success seems, however, to have attended the efforts of King and his associates[4] at the University of Pittsburgh. They venture to identify vitamin C with the hexuronic acid found by Szent-Györgyi in various plant tissues and in the suprarenal structures, as recently discussed in THE JOURNAL.[5] The Pittsburgh biochemists have isolated from orange juice a crystalline product that is protective to the conventional laboratory test animal, the guinea-pig, in daily doses of 0.5 mg. The details of the laborious undertaking need not be rehearsed here. If the claims are further substantiated, as now seems likely, a great step in advance will have been taken. In any event, further specific knowledge regarding the precise etiology and cure of scurvy cannot fail to result from these trends in research.

3. Smith, S., and Zilva, S. S.: J. Soc. Chem. Ind., Chem. & Ind. **51**: 166, 1932.
4. King, C. G., and Waugh, W. A.: Science **75**: 357 (April 1) 1932. Waugh, W. A., and King, C. G.: Isolation and Identification of Vitamin C, J. Biol. Chem. **97**: 325 (July) 1932.
5. Hexuronic Acid and Cellular Respiration, Current Comment, J. A. M. A. **99**: 567 (Aug. 13) 1932.

Current Comment

THE MEDICAL HISTORY OF SIR WALTER SCOTT

In recognition of the centenary of the death of Sir Walter Scott, famous as a master of graphic description, the *Edinburgh Medical Journal* recently issued a Scott centenary number. The issue includes several articles dealing with the medical aspects of the life of this famous novelist. Dr. Robert Hutchison[1] points out that Scott was one of twelve children, the first six of whom died in infancy, in that day not an uncommon occurrence, for dysentery and infection were frequent. Indeed, Walter Scott himself was being nursed by a tuberculous nurse, who chose to conceal the fact. She went privately to consult Dr. Black, professor of chemistry, who at once notified the father of Scott, so that the woman was dismissed and the infant consigned to a healthy peasant. When the child was 18 months old he suffered for three days with a fever which was thought to be the result of cutting large teeth. On the fourth day, when his nurse was about to bathe him, it was discovered that he had lost the power of his right leg. Many physicians were consulted without success; then the parents, eagerly grasping at every prospect of cure, tried every remedy suggested by any one. The condition was no doubt an attack of poliomyelitis, which left Scott lame for life. After all other remedies had failed, the child was sent to the country to live. There his general health improved greatly, although his affected limb was "much shrunk and contracted." Until the boy grew up, he was the subject of innumerable attempts to heal the paralyzed limb. Among others, the notorious charlatan Dr. James Graham, who has been described as the emperor of quacks, was called into the case, but his magnetic methods were of no avail. Scott triumphed over his paralysis by sheer grit and determination. Eventually, in spite of his limp, he could walk 30 miles a day and ride 100. At about 14 years of age he suffered from hemorrhages of the bowels, which unfortunately no one has been able to explain. At about 36 years of age he had an attack of gout and then at 46 repeated attacks of gallstone colic. Scott is described as a gargantuan eater. During the winter months he got little exercise and dined out much. His gallstone colic was treated with hot salt packs, profuse venesection and counterirritation. He says, "They bled and blistered till they left me neither skin nor blood." In fact, he describes his gallstone colic as "the cramp setting a fire to its lodging." After several years the attacks increased in their severity, being treated with large doses of laudanum, calomel and ipecac.[2] The writer was compelled to renounce beer and ale and also pastry, fruit and all that tends to acidity. In one attack lasting six hours he took 6 grains of opium, 3 of scopolamine and nearly 200 drops of laudanum. He also tried innumerable quack remedies without success. Finally, after a terrific dose of calomel, he seemed to recover from the acute condition and thereafter was troubled only with occasional twinges. In December, 1825, seven years before his death, he had a bad attack of renal colic. He died at the age of 62, following several attacks of cerebral hemorrhage. Outside of these diseases, his life was marred only by occasional spells of nervous exhaustion and rather rare attacks of what would ordinarily be called rheumatism. In his account of his own illnesses Scott describes with humorous skepticism the various remedies that were employed. Dr. David M. Greig[3] compares the life of Scott with that of another famous British author and poet, Lord Byron, who also was lame. Their careers are an indication of the way in which a physical defect may on occasion stimulate or be associated with cerebral activity leading to great fame.

1. Hutchison, Robert: Medical History of Sir Walter Scott, Edinburgh M. J. **39**: 461 (Aug.) 1932.
2. M'Neil, Charles: Sir Walter Scott and Res Medica, Edinburgh M. J. **39**: 486 (Aug.) 1932.
3. Greig, D. M.: The Cephalic Features of Sir Walter Scott, Edinburgh M. J. **39**: 497 (Aug.) 1932.

EMBRYONIC SERUM COMPLEMENT

In many species of animals the embryonic blood does not contain demonstrable serum complement. Maugeri[1] of the Hygienic Institute, Berlin, could not detect complement in the serums of embryo rats or of embryo domestic swine. No trace of complement was demonstrable in the rat till the end of the first month of extra-uterine life. About two thirds of the adult complement titer was reached by the beginning of the third month. Maugeri quotes these data in support of the Friedberger theory that there is a definite ontogenetic cycle of serologic ripening in the young of many animal species, and presumably also in human beings. The low complement titers of premature infants suggests this cycle, even though the average full-term infantile titer is 80 per cent of that of the average maternal blood. Maugeri's demonstration of the relatively slow postnatal formation of serum complement in rats may well explain the rapidly increasing resistance of growing rats to pneumococci[2] and certain

1. Maugeri, S.: Ztschr. f. Immunitätsforsch. **74**: 473 (May) 1932.
2. Reciprocal Immunologic Relationships, editorial, J. A. M. A. **99**: 39 (July 2) 1932.

other infections. Many investigators have assumed that such an increase can result only from individual contact with the corresponding specific infectious agent or its reciprocal equivalent.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts on Monday and Wednesday from 10:45 to 10:50 a. m. over Station WBBM (770 kilocycles, or 389.4 meters). The Columbia chain program has been discontinued for the present.

The subjects for the week are as follows:

August 22. Highways, Healthy Ways.
August 24. Infantile Paralysis.

There is also a fifteen minute talk sponsored by the Association on Saturday from 10:45 to 11 a. m. over Station WBBM.

The subject for the week is as follows:

August 27. Exercise for the Middle Aged.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. Verdo T. Webb has been appointed health officer of Little Rock, succeeding Dr. Charles R. Moon, resigned.

License Restored.—The license of Dr. Joseph B. Story, Dierks, was restored, May 10, on his promise to refrain from advertising and on petition of the Howard County Medical Society. Dr. Story's license was revoked, May 12, 1931.

DELAWARE

Building Presented to Academy of Medicine.—The Academy of Medicine of Delaware dedicated a new home in Wilmington, June 1. It is a three story colonial structure, formerly occupied by the old National Bank of Delaware.

Several small rooms and an auditorium, where meetings will be held, are located on the first floor. The second floor will be devoted to a library, private study and stack rooms. Third floor space will be used for club rooms. The Delaware Academy of Medicine was organized about three years ago, the state journal reports, with the establishment of a medical library as its primary purpose. It was incorporated under the laws of Delaware as a nonprofit organization to foster among its members interest in medical, social, economic and educational conditions, and to render service without recompense toward these ends in the state. Provision was made for young physicians to become affiliated at low dues, so that no reputable physician or dentist in the state would be denied its use. Presentation of the building was made by several persons in Wilmington. In addition to the gift of the building, it is the intention of these persons to furnish also the necessary equipment.

DISTRICT OF COLUMBIA

Health at Washington.—Telegraphic reports to the U. S. Department of Commerce from eighty-five cities with a total population of 37 million for the week ended August 6 indicate the highest mortality rate (14.7) appears for Washington and the rate for the group of cities as a whole, 8.9. The mortality rate for the corresponding week last year for Washington was 15.5, and for the group of cities, 10.4. The annual rate for eighty-five cities is 11.6 for the thirty-one weeks of 1932 as against a rate of 12.5 for the corresponding period of the previous year. The department advises caution in the interpretation of these rates, as weekly figures fluctuate widely, as some cities are hospital centers for large areas surrounding them and as Negro death rates are usually high.

ILLINOIS

Personal.—Dr. William T. Short, Stonington, has been appointed district health superintendent of the state department of health, succeeding Dr. Frank P. Auld, Shelbyville. He will have charge of the counties of Macon, Christian, Fayette, Shelby, Cumberland and Montgomery.

Diphtheria Wanes in Illinois.—According to the *Illinois Health Messenger,* case reports of diphtheria for the first twenty-nine weeks of 1932 indicated a decline of 31 per cent as compared with the total for the corresponding period of 1931. In the first five months of 1932 there were 112 deaths from diphtheria against 184 in that period of 1931, a decline of nearly 40 per cent. Cases reported during the six weeks ended July 18 were less than one half the number for the similar period of 1931, which was one of the most favorable years on record. Credit for the decrease in diphtheria is given to the successful diphtheria immunization campaigns carried on throughout the state. Never before have so many children in Illinois been immunized against the disease as during the last twelve months, the *Health Messenger* reports.

Chicago

School for "Occupation Therapy."—Plans are under way for the establishment of a school for occupation therapy to work in connection with the Goodwill Industries' shops for the handicapped and occupation service, and the Cook County Hospital. The organization meeting was held, July 27. Work is being directed to have the school in operation by early fall. The school will be housed in the headquarters of the Goodwill Industries, which is now located in the building formerly occupied by the University of Illinois College of Medicine and which was turned over to the industries in recognition of its work for the rehabilitation of the handicapped. The school is to be independent from all existing medical institutions so as to be able to serve all of them equally well, an announcement states. It is intended to offer free demonstration courses to medical students and physicians. Intensive courses of two, three or four years, to train technicians and practitioners of occupational therapy, may be developed on the basis of the lowest possible student fee to render this nonprofit enterprise self-sustaining in the course of time, the announcement continues. The board of trustees, when organized, will devise some plan of providing a budget. The Goodwill Industries are organized for philanthropic purposes, and the primary objective is to provide occupational training for the handicapped.

INDIANA

Assumes Deceased Physician's Identity.—The arrest of a Negro, whose name is believed to be R. L. Combs, and the revocation of a license by which he was practicing medicine was recently reported by the Indiana state board. The American Medical Association, Feb. 12, 1931, received information from a Dr. William T. Thomas indicating that he was practicing at 2105 Broadway, Gary; that he was a graduate of the Louisville National Medical College in 1897, and that he was licensed in Indiana in the same year. Subsequent checking of the records disclosed that a physician with this name and record was reported to have died at Marion, Sept. 6, 1924, of heart disease. The Indiana State Board of Medical Registration and Examination found out that "Combs" several months ago called on Mrs. Ileene Thomas Burden, stating that he was a representative of the state of Kentucky. He said that he was prepared to secure for her a monthly pension of $75 if she would

furnish the diploma and license of her father, Dr. William T. Thomas, who died in Marion in 1924. Mrs. Burden testified at the recent hearing before the state medical board that she identified the man who is practicing medicine at 2105 Broadway as the same man who obtained from her the diploma belonging to her father. The Grant County license, obtained by the method described, was presented to the Lake County clerk, June 12, 1928, and a new license was issued. The board of medical registration has revoked this license and will proceed to prosecute "Combs" should he continue to "practice" in Indiana. It is reported that he is now charged by the federal government with obtaining a narcotic permit by fraud.

LOUISIANA

New District Medical Society.—Dr. Daniel N. Silverman, New Orleans, councilor of the newly organized Second Congressional District Medical Society, presented a charter to the society at a meeting in Destrehan, July 22. By-laws were adopted by the society, and it was decided to hold regular monthly meetings the third Thursday in each month. Dr. Lionel O. Waguespack, secretary, gave a talk on the purposes of the new society. Other speakers included Drs. Roy B. Harrison and Paul T. Talbot, New Orleans, president and secretary, respectively, of the state medical society; Dr. Hector E. Bernadas, chairman of the council of the state society, and Dr. Leon J. Menville, New Orleans, president of the state board of medical examiners.

Alleged Violation of Milk Ordinance.—A recent investigation by the board of health of New Orleans resulted in the filing of eighty-three affidavits in recorders' courts, July 24, against dairymen "for alleged violation of the city ordinance prohibiting the sale of milk adulterated with dried milk powder." These dairymen have been selling the "powdered" milk for pure milk and charging usual prices, newspapers stated. It was pointed out that salesmen distributed the powder to the dairymen, giving them detailed instructions how to mix it so that the adulteration could not be detected. The dairyman could buy four pounds of powder at about 9 cents a pound. This could be made into ten gallons of "milk," which would be mixed with twenty gallons of pure milk, newspapers reported.

MARYLAND

Outbreak of Food Poisoning.—Eating custard-filled doughnuts caused the illness of twenty-nine people in Baltimore early in July. An investigation by the city health department revealed the fact that the doughnuts were made at one bakery and then placed on sale at a number of grocery stores. The process of manufacture was such that the custard filling was probably allowed to remain unprotected and unchilled from the time it was prepared until the final filling procedure and sale, Baltimore *Health News* states. It was said that the warning which had been issued to the baking industry of the city last year by the bureau of chemistry and food had not been heeded in this instance.

MICHIGAN

State Medical Meeting at Kalamazoo.—The one hundred and twelfth annual meeting of the Michigan State Medical Society will be held in Kalamazoo, September 13-15, under the presidency of Dr. Carl F. Moll, Flint. Meetings will be held at the First Presbyterian Church and the Civic Auditorium. As a departure in the program this year, the individual sections will convene in the mornings, and in the afternoons will join in combined meetings. The preliminary program includes the following speakers with their subjects:

Dr. Howard J. Parkhurst, Toledo, "Physical Therapy of the Commoner Skin Diseases."
Dr. George F. Suker, Chicago, "Retinal Lesions Encountered in Cardiovascular Disease."
Dr. Millard F. Arbuckle, St. Louis, "Factors in Making the Diagnosis in Sinus Disease."
Dr. Walter I. Lillie, Rochester, Minn., "Clinical Significance of Retrobulbar Neuritis."
Dr. Warren T. Vaughan, Richmond, Va., "Certain Rhinologic Aspects of Allergy."
Dr. Stuart W. Harrington, Rochester, Minn., "Empyema."
Dr. Samuel A. Levine, Boston, "Treatment of Acute Coronary Thrombosis."
Dr. Joseph L. Miller, Chicago, "Arthritis."
Dr. Christopher M. Spooner, Toronto, Ontario, "Anomalies of the Genito-Urinary Tract in Children."
Dr. Francis E. Senear, Chicago, "Infantile Eczema."
Dr. Arthur U. Desjardins, Rochester, Minn., "Therapeutic Radiology in Relation to Infancy and Childhood."
Dr. Frederick H. Falls, Chicago, "Diagnosis and Management of Premature Detachment of Normally Implanted Placenta."
Dr. Eric M. Matsner, New York, "Methods Employed in Birth Control."
Dr. Joel E. Goldthwait, Boston, "Posture."

Dr. Edward H. Cary, Dallas, Texas, president, and Dr. Olin West, Chicago, secretary and general manager, American Medical Association, will speak. Dr. Morris Fishbein, editor of THE JOURNAL, Chicago, will address the second general meeting, Thursday evening, September 14, on "The Community's Responsibility to the Medical Profession." In addition to the out-of-state guests, an elaborate program will be presented by Michigan physicians. Round table conferences will be held and moving pictures shown.

MINNESOTA

Violates Basic Science Law.—James J. Carrigan, St. Paul, pleaded guilty, July 19, to a charge of practicing healing without a basic science certificate, before Judge Loevinger of the district court. The defendant, who claims to be a chiropractor and a naturopath, and who formerly practiced in Alberta, Canada, attempted to treat a woman afflicted with a nervous disorder. In addition to giving the patient massage treatments, he sold her a magna-coil electric blanket for $100 and a rupture appliance for $12. He had no medical education whatever and stated in court that he left school at the age of 16. Carrigan was sentenced to ninety days in the St. Paul workhouse. The sentence was stayed for one year and the defendant placed on probation on condition that he refrain from practicing and selling any devices or remedies for the curing of ailments. He was required to return the $12 received from the sale of the appliance.

MISSISSIPPI

Courses in Obstetrics.—Dr. Felix J. Underwood, Jackson, announces that four additional courses in obstetrics for physicians will be given by Dr. James R. McCord, professor of obstetrics and gynecology, Emory University School of Medicine, through an arrangement of the state board of health with the federal children's bureau. A course will be given one week in October, one in November and two weeks in December. Dr. McCord has already given courses of lectures at Indianola, New Albany, Vicksburg, Laurel, Houston, Brookhaven, Jackson, Meridian and Gulfport.

Society News.—At the meeting of the Issaquena-Sharkey-Warren Counties Medical Society, July 12, speakers included Drs. Winston C. Pool, Cary, on "Congenital Syphilis," and Henry B. Goodman, Vicksburg, "Sodium Amytal in the Treatment of Eclampsia." The program, June 14, was given by Drs. Willard H. Parsons on appendicitis; Nathan B. Lewis, the need for anesthetics during labor, and Guy P. Sanderson, Vicksburg, pyelitis.——The East Mississippi Medical Society was addressed, June 16, by Drs. Willis Walley, Jackson, on "Carcinoma, Its Treatment with Special Reference to the Use of Deep X-Ray Therapy," and James L. Parkes, Union, "Tularemia." Hon. Marion W. Reily, Meridian, discussed "The Doctor in the Court Room."——Dr. William F. Hand, Jackson, spoke on "Sarcoma of the Pancreas" before the Central Medical Society at Jackson, June 21.——"The Fracture Problem" was discussed by Dr. Willis C. Campbell, Memphis, Tenn., before the Pike County Medical Society, July 7.——At a meeting of the South Mississippi Medical Society in Hattiesburg, June 9, speakers included Drs. Roland H. Cranford, Laurel, on "The Cancer Situation in Mississippi"; William A. Dearman, Gulfport, "Infectious Mononucleosis," and Theophilus E. Ross, Jr., Hattiesburg, "Treatment of Normal Breech Presentation."

MISSOURI

Personal.—Dr. Malcolm A. Bliss, St. Louis, was presented, June 24, with the "distinguished service medal" for conspicuous service in private life, the first to receive the medal since it was authorized by the last legislature. The presentation was made by Governor Caulfield in the state senate chamber, with prominent physicians and members of the state eleemosynary board in attendance.

Graduate Meeting.—The Five County Medical Society of Southeast Missouri held its second quarterly graduate session at New Madrid, June 14. Lecturers and their subjects were Drs. Joseph P. Costello, "Treatment of Some Common Acute Conditions of Infants and Children"; Harry G. Bristow, "Diagnosis and Treatment of Some Acute Infections," and Alphonse McMahon, "The Endocrines." All the speakers were from St. Louis. The next meeting of the Five County Society will be the second Tuesday in September, with the Dunklin County Medical Society acting as host.

Low Diphtheria Death Rate.—The lowest number of deaths from diphtheria ever recorded in St. Louis was noted for the year 1931. The rate was 4.5 for each hundred thou-

sand of population. Credit for the decrease in the disease is given to the campaign conducted during 1931 by the health departments and medical societies of St. Louis and St. Louis County. A marked advance in the mortality from tuberculosis was noted. There were 878 deaths, a rate of 105.9 per hundred thousand, the highest rate in seven years and an increase of 21 per cent over 1930. This is the greatest increase of any city in the country, the journal of the state medical association reported.

NEW HAMPSHIRE

Physicians Honored by State Society.—At the recent annual meeting of the New Hampshire Medical Society in Manchester, gold medals marking the completion of fifty years' membership in the society were presented to Drs. Herbert S. Hutchinson, Milford, and George Weare Weymouth, Lyme. Tribute was paid also to three other physicians who had practiced fifty years, although they had not held membership for that period: Drs. Leonard Jarvis, Claremont, Ira Joslin Prouty, Keene, and Edward H. French, Quincy, Mass. Dr. French was formerly connected with the New Hampshire State Hospital, Concord. Newspapers have reported that Dr. Prouty died, July 31.

NEW JERSEY

Examination of Domestic Employees.—Results of the first fifteen months' operation of an ordinance requiring physical examination of domestic employees in Newark are reported by the city health officer in *Public Health News*. During 1931, when the law was not generally known to the public, 2,863 persons were examined. More definite efforts toward enforcement in the first three months of 1932 brought about 3,136 examinations. As a result of clinical examinations and a check-up of domestics attending venereal disease clinics, eighty persons were found infected with syphilis in some form; thirty-eight had skin diseases and thirty-one had tuberculosis. Those who have arrested cases of tuberculosis or venereal disease in a noncommunicable form are allowed to continue in employment, but those who may communicate a disease are refused permission to continue. The department follows up all applicants found to be infected to see that proper treatment is carried out. The nature of the disease is not divulged to the employer.

Centenary of Trenton Board of Health.—An ordinance creating a board of health in Trenton, dated July 3, 1832, has recently been found by the city clerk. This was fifty-five years before local boards of health were required by law in New Jersey. The board appears not to have been appointed for a definite length of time, but one could be appointed in case of need and it could dissolve itself when its work was done. Among the names of members of the first board were Drs. James T. Clark, John McKalway, Peter Howell, Joseph C. Welling and Francis A. Ewing. The board was authorized to procure and circulate advice concerning the danger of infectious and contagious diseases and in time of epidemic to "take such measures as they may deem best calculated to arrest its progress and render its ravages less destructive," and it was its duty to "make daily reports of progress of the disease and the measures which they have adopted." The first part of the ordinance outlined a procedure for keeping streets and public grounds clean; inhabitants were required to clean their pavements each week from May to October and were liable to fines of $25 if they omitted this task.

NEW YORK

Dr. Goler Retires.—Dr. George W. Goler, health officer of Rochester since 1896, retired from that office, July 31. He plans to continue as lecturer in preventive medicine at the University of Rochester School of Medicine and Dentistry and to finish writing a history of medicine in Rochester during the past fifty years. Dr. Arthur M. Johnson, deputy health officer for eight years, succeeded Dr. Goler.

New York City

Dr. Park Receives Medal.—The National Academy of Sciences announces that its public welfare medal for eminence in the application of science to the public welfare is to be awarded to Dr. William Hallock Park, director of research laboratories of the New York City Department of Health. The citation refers to Dr. Park's work as a pioneer and leader both in research and in the application of scientific discovery in the prevention of disease. The medal will be presented at the next annual meeting of the academy at Washington, D. C., in April, 1933. Ten previous awards have been made, as follows: the late Gen. George W. Goethals, 1914; the late Dr. William C. Gorgas, 1914; Cleveland Abbe, Ithaca, N. Y., geographer, 1916; Gifford Pinchot, present governor of Pennsylvania, 1916; Samuel W. Stratton, late president of Massachusetts Institute of Technology, 1917; President Hoover, 1920; Dr. Charles W. Stiles, Washington, 1921; Dr. Charles V. Chapin, Providence, R. I., 1928; the late Stephen T. Mather, 1930, and Wickliffe Rose, former president of the General Education Board, New York, 1931. This award was established in 1913 through a gift from Mrs. Helen Hartley Jenkins, in memory of her father, Marcellus Hartley.

Lying-In Hospital Moves to Medical Center.—The last patients left the Lying-In Hospital, Second Avenue and Seventeenth Street, August 7, as final preparations were made to close the institution, which becomes a part of the women's hospital of the New York Hospital-Cornell University Medical Center when it opens, September 1. Lying-In Hospital, founded in 1798, was said to be the oldest maternity hospital in the city. The Lying-In Society, which operated it, was founded especially to care for the widows of men who died in a yellow fever epidemic at that time, according to an account in the New York *Herald Tribune*. First established at a house on Cedar Street, the hospital has occupied various sites. From 1801 to 1827 its income was used simply to maintain a ward in the New York Hospital. For many years afterward the society operated a district service for mothers in their own homes. In 1895, with the aid of the late J. Pierpont Morgan, a hospital for forty patients was established in the old Hamilton Fish mansion in Stuyvesant Square, with Dr. William H. Spiller, present medical superintendent, as resident physician. This building was closed in 1899 and there was no hospital in operation until January, 1902, when the building just vacated was opened. It is reported that this building will now be taken over by Gramercy Hospital, formerly the New York Skin and Cancer Hospital.

OHIO

District Meetings.—The Seventh District Medical Society held its annual meeting, June 17, at the Union Country Club, Dover. Speakers on the scientific program were Drs. Isaac B. Harris, Columbus, on "Acute Obstruction"; Charles J. Shepard, Columbus, "Treatment of Prevalent Skin Diseases"; Wells Teachnor, Columbus, "Injection Treatment of Internal Hemorrhoids." Drs. Herbert M. Platter, Columbus, president of the Ohio State Medical Association, and Emmet B. Shanley, New Philadelphia, councilor of the seventh district, also made addresses.——The annual meeting of the Eighth District Medical Society was held, June 23, at the Rocky Glen Sanatorium, McConnelsville. Among the speakers were Drs. Charles A. Doan and Ray W. Kissane, Columbus, on "The Basis of Prognosis in Disease" and "Habits in Heart Disease," respectively. Dr. Herbert M. Platter, Columbus, president of the state medical association, and Dr. Harry G. Southard, Marysville, state health director, were among the speakers at a luncheon meeting.

PENNSYLVANIA

Society News.—The medical societies of Clearfield, Jefferson and Indiana counties held their third joint meeting, August 11, at Indiana with the following speakers: Drs. Edward B. Heckel, Pittsburgh, "Injuries to the Eyeball"; Donald Guthrie, Sayre, "Symptomatology and Early Diagnosis of Intestinal Obstruction"; Ronald L. Hamilton, Sayre, "Electrocardiography as an Aid in Diagnosis of Heart Disease." Dr. Hugh Robertson, York, showed a motion picture film of an electrocardiogram during angina pectoris.——The Cambria County Medical Society held its annual "north of the county" meeting at the Chetremon Country Club near Cherry Tree, August 11, with Dr. William S. Wheeling, Windber, as the speaker, on disease of the thyroid. The society will hold its annual picnic, September 8, at the Johnstown Rod and Gun Club.

Philadelphia

University News.—A clinic for prenatal and postnatal care to needy mothers was opened, August 5, at the Germantown Community Center, under the auspices of the Woman's Medical College of Pennsylvania. Dr. Ann G. Taylor, clinical professor of obstetrics, is in charge.

Health Department Requests Serum.—Dr. J. Norman Henry, director of public health, is reported to have issued a call for donations of blood serum from persons who have had infantile paralysis, to meet the need in current cases. It was said that forty cases had been reported in the city between August 1 and 8. In 1931 there were only fourteen cases in the whole month of August.

Hospital News.—Garretson Hospital, the maternity hospital of Temple University School of Medicine, is to be removed to a new addition to the Temple Hospital, it has been announced. ——An artificial respirator has been presented to Northeastern Hospital, in memory of the late Dr. John H. Lock, by Dr. and Mrs. Frederick E. Keller, his son-in-law and daughter.——Dr. Joseph C. Bloodgood, Baltimore, gave an address at Jeanes Hospital, August 2, on cancer.

TENNESSEE

Hospital News.—A $325,000 building has recently been completed at the Western State Hospital, Bolivar, for the care of insane Negro patients. It has accommodations for 400 patients, including two wards for the tuberculous.——Martha Gaston Hospital, occupying the building formerly known as the Cedarcroft Hospital, newly renovated, was opened, August 15. Dr. Robert B. Gaston, owner and superintendent of the new hospital, was formerly superintendent of McFarland Hospital, Lebanon, which will now be operated with Dr. Jerry J. McFarland in charge.

Society News.—Drs. Hugh F. Crawford and Giles A. Coors, Memphis, addressed the Memphis and Shelby County Medical Society recently on "Undulant Fever" and "Postoperative Gangrenous Ulcer of the Abdominal Wall," respectively. ——Dr. Julius C. Brooks addressed the Hamilton County Medical Society, August 11, on "History of the Medical Profession in Chattanooga," and Dr. Fred B. Stapp, "Looking Backward."——At the June 28 meeting of the Knox County Medical Society, Dr. Richard A. Barr, Nashville, spoke on "Preoperative and Postoperative Treatment of Abdominal Cases."——Dr. Paul B. Welch, Coral Gables, Fla., delivered a lecture before the Sullivan-Johnson Counties Medical Society, Bristol, August 3, on gastro-intestinal reflexes.——Drs. Rudolph W. Holmes, Chicago, and Frederick C. Freed, New York, addressed the Gibson County Medical Society, Trenton, July 25, on obstetrics.

WISCONSIN

License Revoked.—The license of Dr. Leland L. Trump, Milwaukee, was revoked by the state board of registration, June 29, on the reading of his court record of conviction of manslaughter.

Society News.—At a meeting of the fifth district of the Wisconsin State Medical Society at Kiel, July 28, speakers were Drs. Philip W. Brown, Rochester, Minn., on colitis; Kellogg Speed, Chicago, fractures, and Herman C. Schumm, Milwaukee, uses and application of plaster of paris. Dr. William A. Evans, Chicago, spoke in the evening on "What's Happening to Doctors."——Three physicians addressed the Racine County Medical Society, Racine, June 16, as follows: Drs. Walter H. Watterson, La Grange, Ill., and Stanton K. Livingston, Hines, Ill., on artificial pneumothorax and maggot treatment of osteomyelitis, and Willard Van Hazel, Chicago, thoracoplasty.——Dr. Samuel R. Mitchell won the first low gross score and Dr. Benjamin E. Urdan the first low net score at the fifth annual golf tournament sponsored by the Milwaukee County Physicians' Golf Association and the Milwaukee County Medical Society, July 21, at the Waukesha Country Club.

WYOMING

State Medical Meeting and Election.—Dr. Herbert L. Harvey, Casper, was named president-elect of the Wyoming State Medical Society at the annual meeting in Rock Springs, July 18-19. Dr. Frederick L. Beck, Cheyenne, was installed as president; Dr. Joseph L. Wicks, Evanston, was elected vice president, and Drs. Edwin Earl Whedon, Sheridan, and Evald Olson, Meeteetse, were reelected secretary and treasurer, respectively. The 1933 annual meeting will be held in Yellowstone Park. At the first session the president, Dr. Robert H. Sanders, Rock Springs, made his annual address and Dr. Edward H. Cary, Dallas, Texas, President, American Medical Association, gave an address. Dr. Cary also contributed to the scientific program an address on glaucoma. Among other speakers were Drs. Foster J. Curtis, Salt Lake City, "Raynaud's Disease: Differential Diagnosis"; William P. Wherry, Omaha, "Sinus as a Source of Infection"; Warren Thompson, Omaha, "Blood Dyscrasias"; Karl S. J. Hohlen, Lincoln, past president, Nebraska State Medical Association, "Modern Phases of Traumatic Epilepsy"; Richard A. Pearse, Brigham City, Utah, president, Utah State Medical Association, "Tularemia"; G. Gill Richards, Salt Lake City, "Medical Management of Gastric Ulcers," and Frank B. Stephenson, Denver, president-elect, Colorado State Medical Society, "Bone Tumors Roentgenologically Considered." Clinics were held each morning at the Wyoming General Hospital. The Sweetwater Medical Society entertained with the annual banquet and dance, Monday evening, July 18.

GENERAL

American Hospital Association in Detroit.—The thirty-fourth annual session of the American Hospital Association will be held in Detroit, September 12-16, under the presidency of Mr. Paul H. Fesler, superintendent, Wesley Memorial Hospital, Chicago. Among numerous physicians who will take part in the program are Drs. Joseph C. Doane, Philadelphia, who will lead a round table discussion on financial problems of hospitals; Fred G. Carter, St. Paul, Minn., who will speak on "A Medical Approach to Hospital Administrative Problems"; Edward J. O'Brien, Detroit, "Surgical Treatment of Pulmonary Tuberculosis"; Henry D. Chadwick, Detroit, "The Tuberculosis Problem as It Affects the General Hospital" and Malcolm T. MacEachern, Chicago, who will lead round table discussions, among other things, on making greater use of existing hospital facilities, including their use for veterans.

American Academy of Ophthalmology and Otolaryngology.—The thirty-seventh annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held in Montreal, Canada, September 19-23. Dr. Samuel Hanford McKee, Montreal, is president and Dr. Burt R. Shurly, Detroit, president-elect. The opening session will be devoted to a symposium on the progress of general medicine in relation to diseases of the eye, ear, nose and throat. Thereafter the mornings will be occupied with demonstrations under sixty-five instructors. Four special courses will be given: "Histopathology of the Eye," "Histopathology of the Nose, Throat and Ear," "Lesions of the Fundus" and "Clinical Pathology of Otitic Lesions." Section meetings will be held in the afternoons. The American Board of Otolaryngology will conduct examinations, Saturday, September 17, and the American Board of Ophthalmic Examinations will hold examinations, Monday, September 19.

Prevalence of Typhoid.—Newspapers reported nine cases of typhoid recently in Carthage, N. Y., among which two deaths occurred. The cases were attributed to a hitherto unknown carrier who was found to have handled the milk supply used by all the patients. Dr. Arthur T. McCormack, Louisville, health officer of Kentucky, warned of a serious epidemic in that state, 603 cases having been reported in July, compared with 105 in July, 1931. Ten cases were reported, July 13, in Hocking County, Ohio, eight of which were in one community; seven cases, including six in children, were being investigated in Athens County. Still another outbreak, in Muskingum County, was attributed to swimming in polluted streams. Five cases in Newkirk, Okla., caused the state health department to begin an investigation to trace the source of the infection. Sixty cases occurred in the state during the week ended July 23, according to the health department. The U. S. Public Health Service announced that 1,231 cases had been reported from forty-six states during the week ended July 23.

Survey of Facilities for Lepers.—A survey to determine the adequacy of facilities and the extent to which provisions are made for the protection of the public health in the care and treatment of leprous persons in Hawaii has been authorized by a joint resolution of Congress. The resolution was based on information furnished by the governor of Hawaii to the effect that there are at the present time 623 patients being cared for at the expense of the territory in its leprosariums. The cost entailed in this care is considered a heavy burden on the "limited resources of the territory." Physicians of the U. S. Public Health Service who will conduct the survey are Drs. James C. Perry, John W. Kerr and George W. McCoy. They will prepare an estimate of the cost of construction and equipment of a receiving station and hospital, including the purchase of necessary grounds as well as an estimate of the annual cost of maintenance and operation. They will also report on remedial legislation providing for the further control and eradication of the disease in the territory. In 1905, a congressional appropriation provided for the establishment of a hospital station and laboratory of the Public Health and Marine Hospital Service of the United States for the study of the methods of transmission, cause and treatment of leprosy at Kalawao, Island of Molokai. About 640 acres was transferred in perpetuity to the United States by the territory. However, after several years' operation, it was found impracticable for the United States to maintain a separate institution, and through subsequent legislation the land was reconveyed to the territory. Except for a station at Kalihi receiving hospital, Honolulu, the territory has since then borne the

complete expense of caring for leprous persons in its jurisdiction. None of the territory leper patients have ever been cared for in the leper colony at Carville, La., the establishment of which was provided for by an act of Congress in 1917. The Kalihi station, known as the U. S. Leprosy Investigation Station, is administered by the public health service.

FOREIGN

Typhoid Outbreak in Havana.—Five deaths and thirty-two cases of typhoid were reported in Havana, Cuba, within twenty-four hours in a serious outbreak, the Chicago *Tribune* reported, July 27.

Cholera in China.—Newspapers reported, August 2, that cholera was widespread in southern Hupeh. So serious was the spread of the disease in western Honan province, it was stated, that authorities appealed to Nanking for medical assistance. The death rate in the city of Honanfu was mounting rapidly. Bubonic plague was also taking a heavy toll in lives, the report continued. The flooding Canton River demolished 600 houses and drowned 500 persons at Canton proper, it was said. In a home for the aged, which was submerged, eighty persons perished. According to the report, in western Shensi province the Yellow River had inundated thirty towns, leaving 50,000 persons homeless.

Typhus Fever Epidemic.—*Public Health Reports* records a recent epidemic of typhus fever in the Vilna district of Poland. The disease was prevalent in the county of Dzisna and had broken out in the county of Molodeczno, where twenty-three new cases had been reported. Preventive measures had been successful in the counties of Braslaw, Swieciany and Oszmiana, where only six cases had been reported. In Wolozyn County, 150 new cases, with 20 deaths, were recorded. This county was said to be the central point in the epidemic. The disease was prevalent in the districts of Soviet Russia bordering on Molodeczno County, it was said. The Polish public health service reported 106 cases of typhus fever for the period May 8-14, 1932.

Government Services

Army Personals

Major Bartlett L. Shellhorn, relieved at Watertown Arsenal, Massachusetts, and assigned to duty at Fort George Wright, Washington; Major Arthur D. Jackson, relieved at Fort George Wright and assigned to Fort Wadsworth, N. Y.; Lieut. Col. James A. Wilson, assigned at Fort Snelling, Minnesota, effective on completion of present tour of foreign service; Lieut. William A. D. Woolgar, relieved at Fort Lewis, Washington, for assignment to duty in China; Major Thomas L. Long, relieved at San Francisco and assigned to duty in Hawaiian Department; Majors Robert L. Tebbitt and Rae E. Houke, having been found incapacitated for active service on account of disability incident thereto, and such finding having been approved by the President, their retirement is announced; Lieut. Col. Harry H. Van Kirk, Columbus, Ohio, proceeded to his home about June 16 to await retirement for the convenience of the government.

U. S. Public Health Service

P. A. Surg. Edward R. Pelikan, relieved at Manila, P. I., June 18, and assigned to duty at Angel Island Quarantine, Calif.; Surg. William F. Tanner, relieved at Rosebank, S. I., N. Y., and assigned at U. S. Quarantine, Brownsville, Texas, to assume charge of service activities; A. A. Surg. Frank D. McCreary, relieved at Evansville, Ind., and assigned to duty at Carville, La.

Course for Reserve Officers

The fourth medicomilitary course of inactive duty training at the Mayo Clinic, Rochester, Minn., for Medical Department Reserve Officers will be held October 16-29. All the facilities of the clinic are placed at the disposal of the officer students and the faculty and staff have volunteered their services in the interest of national defense. Morning hours will be devoted to purely professional subjects selected by the students, afternoons to medicomilitary subjects, and evenings to a lyceum course of general interest, according to the announcement. Application for the course should be made to the director of the Mayo Foundation, Rochester, Minn., or to the Corps Area Surgeon, Seventh Corps Area, Omaha, Neb.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 23, 1932.

The New Edition of the British Pharmacopeia

The new edition of the British pharmacopeia is larger than the edition of 1914, containing 763 pages against 633, and several important changes have been made. A new feature is the addition after the doses of the important drugs of notes for prescribers, giving the amount of active principle in the minimum dose. With the object of simplifying prescribing, it is recommended that the symbol ℥, which has been used to represent 60 grains and also a fluidrachm, and the symbol ℨ, used to represent 480 grains, sometimes 437½ grains and also a fluidounce, should be discontinued, and that instead solids should be prescribed in grains and ounces (oz., 437½ grains) and liquids in minims (♏) and fluidounces (fl. oz.) and that quantities should be written in Arabic instead of in the much used Roman numerals. To avoid the possibility of confusion between gram and grain, the symbol G should be used as the contraction for the former. For all processes, chemical and pharmaceutic, the metric system of weights and measures is employed, but doses are expressed in both the metric and the imperial systems.

A considerable proportion of the drugs and preparations of the previous edition have been omitted on the ground that the British pharmacopeia is not a formulary but a book of standards. An arrangement has, however, been made that they will appear in the British Pharmaceutical Codex (which is an imperial dispensatory, published by the Pharmaceutical Society). A number of drugs have been omitted on the ground of insufficient medical value. All the local preparations used in the tropical parts of the empire and the colonies have been excluded, because it is thought that these places should have their own local formularies. The whole group of hypodermic injections has been omitted, because it is considered that the physician should prescribe the dose of the active material as such, rather than an official hypodermic injection. Many formulas for powders and pills have been omitted, because it is thought that the combination should be left to the individual physician, though such widely used combinations as Dover's powder, Gregory's powder and black draft have been retained. The wines have been omitted in conformity with the international agreement for the unification of formulas for potent drugs, which requires that none shall be prepared in the form of a medicinal wine.

New introductions are ointments for the eye and industrial methylated spirit, which is permitted for the preparation of certain external remedies, and certain internal ones if the spirit is eliminated from the final product. The progress of organotherapy is reflected in the inclusion of such substances as insulin and pituitary solution. The dose of the latter is given in units only and not in volume, because manufacturers are producing entirely different strengths, and physicians, unaware of the fact, have been prescribing by volume. Doses of digitalis are given both in units and in volume; the commission would have liked to give only the former but thought that the medical profession was not quite prepared for this. Of the vitamins only one, apart from cod liver oil, appears, for the reason that it is susceptible of standardization. Of vaccines only one, apart from that of vaccinia, appears; namely, the typhoid and parathyphoid (TAB).

A White Australia: The Problem of the Half-Caste

Dr. Grenfell Price, who is going to America in September to investigate social conditions, particularly in the tropical regions, has returned to Adelaide from a preparatory inspec-

tion in North Australia, with much information about the aborigines. He considers that the problem of the future of the race is more important than has been realized. The marrying of half-castes to one another and to white persons was the policy for solving the problem which the physicians at Darwin considered the most hopeful. They told him that there had been no throwbacks as the result of these mixed marriages. The dark pigmentation of the skin disappears eventually. The raising of the wages of half-castes and pure aborigines involved conditions that might force pastoralists from the land. The future of the white Australia policy depended on the pioneer work of white women, who would prosper if temperamentally suited to the life and given proper facilities. It looked as though the policy might succeed in the tropical part of Australia.

A Provident Hospital Scheme for the Middle Classes

Many persons of the middle class are in the unfortunate position of not being subjects for the free medical treatment which the poor receive in serious illness nor able, on the other hand, to bear the great cost, as the rich can. Indeed, for them such an illness, especially if it includes a surgical operation, may be a financial disaster. As a remedy for this evil the British Provident Association has been formed. It aims at providing hospital and nursing-home beds at reasonable charges and covering substantially, if not wholly, the cost of maintenance during the illness, and the surgical fees. The association aims at securing 100,000 contributors of $50 each, so that by means of the money received it can obtain 1,000 beds in the existing voluntary hospitals or in new buildings, to be known as the association's "home hospitals." An important meeting of the association took place at the Mansion House under the presidency of the lord mayor of London. The chairman of the association, Lord Lloyd, said that it was estimated that there were in greater London 600,000 families (2½ million persons) belonging to the middle and professional classes, any of whom might at any time be in need of hospital accommodation for serious illness. In the voluntary hospitals of London, 1,500 beds were available for such a purpose, but many more were needed. While a payment of $50 will provide the benefits for a man and his wife and children up to the age of 21 years it has been decided to accept $25 from single persons who might have a difficulty in providing $50.

In supporting the scheme, Lord Moynihan said that surgery had now been made safe for the patient, but it remained to make the patient safe for surgery. For an operation, days or weeks of preparation might be necessary. Such a procedure as blood transfusion was now a commonplace, and this and other methods were possible only under institutional care. Only twice in the last twenty years had he performed an operation in a private house. Nursing homes gave fairly adequate facilities to the rich, but those who got the best from the surgical side of the profession were the poor, who partook of the benefits of the voluntary hospital system, one of the greatest glories of the country. But with regard to the middle class it had been one of the miseries of his professional life to feel that owing to the inadequate preparation possible to them they had either to be recipients of charity, which they generally detested, to strain their purses unduly to meet the necessary expense, or to ask the surgeon to forego part of his fee. He could say that two thirds of the work he had done in surgery was for no fee, and he was not distinguished from other surgeons in that respect. But that was not the right principle from the point of view of the patients themselves, for it made them reluctant to go to the surgeon again.

Lord Dawson of Penn said that the kernel of the difficulty was that side by side with decreased capacity to pay, owing largely to the financial situation, had grown up increased cost of treatment, resulting from the growth of medical knowledge. A few years ago such diagnosis as was possible was simple; now roentgen examination and chemical analyses might be necessary. The tendency today was to investigate disease in its early stages. He did not think that any scheme of insurance should be confined to serious illness; it should include methods of prevention. Illustrating the increase of cost, he said that the x-ray department of a hospital of 400 beds cost $750 in 1911, $3,750 in 1921, and $14,000 in 1931. There was only one way of meeting the needs of the nation, except for the fortunate few, by mass production. The last thing that anybody who knew the value of medicine would wish was that institutional treatment should replace the care of the patient in his own home by the family physician; but there must be insurance, which was becoming more a part of the fabric of the daily life of the people.

PARIS

(From Our Regular Correspondent)

July 13, 1932.

A Society to Combat Crime

A society has been formed in Paris, on the initiative of Dr. Toulouse, to study, in a group of psychiatrists, medicolegalists, jurisconsults and magistrates, the means of diminishing crime, and particularly that due to uncontrolled passion, which is increasing in France. The explanation is easily found in the extreme indulgence of the juries, who impose insignificant penalties or pronounce acquittals that are often scandalous. Not being in a position to influence the juries, Dr. Toulouse has founded the society of mental hygiene and created the Henri-Rousselle hospital, where free consultations are given in mental disorders. He believes that one can organize crime prevention by starting with the principle that every criminal is abnormal. If the psychiatrist were allowed to intervene, in time it would be possible to diagnose mental states which may become dangerous if left untreated. At the Henri-Rousselle hospital, the patients come of their own accord, although usually at the suggestion of their entourage, disquieted by their peculiar behavior or by their violent words and acts. The most dangerous subjects, however, are those who refuse to go to the hospital. The central problem therefore is to find some legal means to compel them to submit to an examination. It is a delicate matter, for the family physician must not violate the right of privileged communication and cannot report the subject to the authorities. All he can do is to give advice, which is seldom followed. French law does not permit intervention until misdemeanors have actually been committed. In that event, the entourage notifies the police commissioner, who, after securing a physician's certificate, has the subject transported to the special infirmary of the prefecture of police, where he is placed under observation for forty-eight hours in a prison cell, along with thieves and murderers. He is then either released or sent for a further surveillance to a psychopathic hospital, according to the judgment of the medical director of the infirmary, who is a competent psychiatrist but who has not the time nor the facilities for making a thorough examination at the infirmary. At its first meeting, the Société de prophylaxie criminelle proposed carrying out the plan of Professor Claude, which involves the creation of a special medicojudicial tribunal, composed of magistrates, psychiatrists and lawyers, before which persons presenting a mental state disquieting to themselves and to their entourage would be courteously invited to present themselves on the notification of any person having cause to complain of their behavior, and would be brought by force if they refused to come voluntarily. If the questioning and the psychiatric examination reveal only slight disorders that are not a menace to others, the subject would be placed under the observation of his family and would be urged to seek treatment in the center for mental prophylaxis. If the disorders were of a more serious nature, he would be

transferred to a psychopathic hospital, from which, on dismissal, he would be subjected to a discreet surveillance by the police. These provisions are similar to those created for the organization, a few years ago, of the tribunals for incorrigible children. Many other questions dealing with this general subject have been based on the program of the society and have necessitated a division into several sections: influencing of legislation, organization of criminal prophylaxis, criminologic institutions and psychiatric annexes created within the prisons, modification of the criminal code, delinquent children, social factors influencing crime, sexologic criminology, and narcotic addicts and alcoholism. All these sections will present papers at the next meeting of the society.

BERLIN

(From Our Regular Correspondent)

July 18, 1932.

Meeting of the Prussian Council on Health

The committee on dermography and eugenics, of the Preussischer Landesgesundheitsrat, held a meeting, July 2, under the chairmanship of Ministerialdirektor Dr. Schopohl, to consider the importance and tasks of eugenics in the service of public welfare. In his opening address, the chairman called attention to the fact that the biologic heritage of the German people is menaced. With startling clearness eugenic researches show that the families with a sound heritage do not produce sufficient posterity to preserve the status quo, whereas the families with an unsound heritage are increasing unchecked, with the result that they are requiring more and more welfare aid at the expense and to the disadvantage of the families of sound heritage. Eugenic thinking, planning and acting are therefore needed. The desire to safeguard the future of our people may possibly awaken a consciousness of the need of mutual deliberation, whereas otherwise forces may remain at work that will lead to disharmony and the lack of mutual aid.

The meeting was attended by a large number of experts in the fields of hereditary research and psychiatry, medicine and jurisprudence, ethics and pedagogics, public and private welfare work, administration and politics. The speakers were Prof. Dr. H. Muckermann of the Kaiser-Wilhelm-Institut für Anthropologie, menschliche Erblehre und Eugenik; the psychiatrist Prof. Dr. J. Lange of Breslau, and Prof. Dr. Kohlrausch, an authority on criminal law, Berlin. The criteria presented by the speakers may be divided into three parts. The first part emphasized, in agreement with the resolution of the Prussian state council, dated Jan. 20, 1932, the need of a general plan of eugenic education, consisting primarily of instruction in the theory of heredity and in eugenics, and in the training of teachers, physicians and all persons who are engaged in welfare work. The research centers for theory of heredity and eugenics should be supported in spite of the present economic disturbances. Eugenic education should work toward the end that, in anticipation of a legal regulation as the ultimate goal, a voluntary exchange of health certificates before the engagement may become a family custom. The marriage consultation centers should furnish primarily eugenic advice.

The second part of the criteria deals with the necessity of adopting negative eugenic measures, in order to limit the unrestricted propagation of offspring with serious hereditary defects, which, in ever increasing numbers that are today scarcely endurable, fall a burden to the public welfare organizations; which fill the institutions for mental patients and weakminded persons, and which constitute a large portion of the social service material and the criminal class. In view of the fact that this goal cannot be attained by institutional care, the legal approval of a strict eugenic sterilization (not castration), under suitable controls, is demanded, although no general compulsory legislation is proposed. The destruction of seriously defective living human beings is not contemplated. The social aid given living persons with hereditary defects should not be discontinued, but the extent of the need of social aid service should be lessened by means of sterilization.

The third part of the criteria comprises, in supplementation of the eugenic education, the positive eugenic measures for the advancement of the family of sound heritage. Along with the providing of employment and the establishing of settlements or colonies, the granting of economic favors is to be considered: adjustments in the salaries of persons steadily employed, and reductions of taxes in keeping with the number of children and the family income.

After a lengthy discussion, the criteria were unanimously adopted with slight modifications. For the further elaboration of the question, especially as regards the legal side (sterilization), a commission was appointed that comprises, in addition to the chairman of the Prussian health council, Professors Muckermann, Lange, Kohlrausch and Ministerialrat Ostermann, and will be supplemented by physicians, jurists, theologians, teachers, and representatives of the public and the volunteer welfare services and the civil governments.

New Regulations Governing Medical Students

In the regulations concerning the examination in medicine there are some important changes, taking effect at once, that apply solely to the preclinical years, other changes being reserved for the clinical years. Whereas heretofore the preliminary test called the Physikum has followed the preclinical semesters, now a preliminary test must be taken after the first two semesters, which will include chemistry, physics, zoology and botany. After three more semesters, an examination is given in anatomy, general physiology and physiologic chemistry. Three semesters must intervene between the examination in the pure natural sciences and the anatomic-physiologic test. Until April 1, 1935, however, a transitional ruling provides that under certain circumstances two semesters may suffice.

For admission to the test in the natural sciences the candidate must present not only the graduation diploma of the preparatory school attended but also the so-called Latein-Nachweis, or evidence that he has completed a satsfactory course in Latin. The test in zoology and botany will cover mainly the elements of general biology with especial consideration of the theory of hereditary transmission.

It was finally decided not to hold special lectures in the natural sciences for medical students. It is, however, expected that the professors in the natural sciences will adapt their lectures to the needs of the medical students. If in the examination in the natural sciences the candidate does not secure at least the grade "satisfactory" in all the subjects, he has failed to pass. If he receives the grade "unsatisfactory" in only one subject, the candidate may be excused (in part or entirely) from a review of the subjects in which he had at least a passing grade. But if the candidate fails in two or more subjects, he must review all the subjects covered by the examination.

If the student obtains at least "good" in any subject of the examination, he is relieved of the necessity of reviewing that subject for a second test. The second examination will not ordinarily be given until after the lapse of a complete semester. If the student fails in as much as one subject of the second examination, he is absolutely excluded from taking a third test. Nor is the student permitted to begin his studies over again and thus secure a further admission to the test. The two preliminary tests must be taken within a period of twelve months; otherwise no credits obtained in any subjects will be recognized.

In view of the serious consequences that may arise from a mental disorder or mania in a person practicing the art of medicine, it has been decreed that, in the event of the existence of such a condition in an applicant, admission to the tests, the acceptance of an internship, and the securing of a license to practice will be withheld, if the fear appears justified that the candidate, on account of his disorder, may not be a reliable physician.

BELGIUM

(From Our Regular Correspondent)

July 6, 1932.

Meeting of International Bureau of Medicomilitary Bibliography

The second session of the Office international de documentation médico-militaire was held at Liége, June 23-25. More than 200 representatives of twenty-six different nations, three of whom were from the United States, participated.

The opening meeting, held in the Palais du gouvernement provincial, was attended by a large proportion of the diplomatic corps accredited to Belgium, and by the chief officials of the city and the province. Governor Priard in the welcoming address expressed his gratification at seeing assembled an intellectually élite body whose ideals are devoted to the love of peace. Colonel Voncken, of the army medical corps of Belgium, the next speaker, outlined the great task to be performed in order that their mission with respect to peace and human welfare, the international training of military physicians, and the formation of bibliographic collections may be fulfilled. Professor Mahaim considered then, in the light of international law, the work of the military physician and more particularly the organization of international cooperation in this field. Colonel Van Baumberghen of the Spanish army, chairman of the permanent committee, declared the second session of the Office international de documentation medico-militaire to be formally opened.

Major Dendal discussed the menace of aerochemical warfare from the point of view of the protection of the civil population. While all war marks a return to barbarism, it is nevertheless an eventuality that must be recognized. Recent air maneuvers appear to indicate that aerochemical warfare will play a horrifying part in the deciding of a military campaign, but in reality numerous physical conditions will prevent its complete realization. The civil population must not underestimate the danger and must organize in time of peace for its protection and for the aid of victims of aerochemical attacks. At the close of Major Dendal's address, Governor and Madame Pirard received in their salons the notables present. The papers were presented, June 23-25, and a brief analysis of them will be given.

Major Van De Roemer, of the Netherlands army medical corps, explained the advantages of the use of water routes, not only as a means of evacuation but also as a means of transporting a complete sanitary unit. He described the installations that would be carried out in time of war, such as a surgical ship (1,000 and 500 tons), hospital ship, personnel ship, supply ship, and a ship for disinfection and disinfestation.

General Inspector Dopter, of the medical corps of the French army, called attention to the gravity of a diphtheria outbreak in the army. He pointed out the difficulties of vaccination in time of war. The use of the new hyperactive anatoxin has made it possible to obtain the same results with only two inoculations instead of three.

Captain Govaerts explained the modern conception of a lesson in gymnastics: the phase of getting one's stride, the phase of maximum effort, and the phase of a progressive return to a state of rest. He elucidated also the physiologic conceptions that have impressed on present-day gymnastics its peculiar character.

Colonel Thomann, pharmacist of the Swiss army medical corps, discussed the requirements of the individual first-aid kit carried by every soldier. He cited the conclusions of the commission on standardization on this point and demonstrated the different types of dressings in use in the various armies.

Lieutenant Colonel Vollenweider, of the Swiss army medical corps, showed what great care is taken in selecting the reserves in the Swiss army, and with what great diligence the physical training of the recruit is carried out. He explained also the procedure for invaliding for infirmities contracted in the army.

Commandant Taditch, of the army medical corps of Yugoslavia, discussed the organization and the functioning of the bacteriologic laboratories of the army in the field. The bacteriologic laboratory has considerable importance under ordinary conditions and might become exceedingly important in the event of bacteriologic warfare, the launching of which is a possibility.

Colonel Schickelé, of the French army medical corps, explained first the governing principles of the present organization; evacuation and hospitalization are not two distinct acts but are closely associated. He showed how improvements in the means of transportation had made it possible, within a few hours, to evacuate the wounded to a zone where they find adequate facilities for treatment. He discussed the mathematical data that will enable one to determine the extent of the facilities needed, on the basis of the number of men in action.

In this connection a resolution reading as follows was presented and turned over to the permanent committee of the Congrès internationaux de médecine et de pharmacie militaires:

The assembly of officers of the army medical corps of twenty-six nations, meeting at Liége on the occasion of the second session of the Office international de documentation de médecine militaire, hereby promulgates the following resolution:

With a view to assuring the favorable hospitalization and prompt treatment of the sick and wounded in time of war, it is desirable that certain areas be reserved for the army medical service; that all organizations of military nature be excluded therefrom, and that these areas enjoy such immunity as is conferred by the convention of Geneva.

Lieutenant Colonel Vargas advocated a record card, which the wounded and sick will receive when their wounds are first dressed or medical treatment is given and which will accompany them during their evacuation toward the rear. This card differs from the model recommended by the commission on standardization but is nevertheless similar in style and content.

In addition to this series of communications, the permanent committee arranged with Colonel Schickelé, of the French army medical corps, for a public lecture to be delivered at the University of Liége. After placing at the foot of a monument erected to the memory of the university students who died in the war a magnificent wreath with the colors of military medicine, Colonel Schickelé entered the university auditorium, where the élite of the city was gathered with the Belgian and foreign members of the society. Colonel Voncken presented the speaker, who then gave an historical account of military medicine down through the centuries and pointed out not only the evolution of therapeutics but also the status of the military physician. He recalled the military physicians who stood out at the siege of Troy, and mentioned Ambroise Paré, Larrey and others. During this session, the mayor of the city of Liége, surrounded by his aldermen, turned over to the permanent committee certain rooms that he placed at the disposal of the Office de documentation. A reception given by the city of Liége brought together the delegates, the civil and military authorities, and the members of the Société liégeoise.

The government of the United States was represented by Commander William Seaman Bainbridge, member of the permanent committee of the Congrès internationaux de médecine et de pharmacie militaires, and Capt. W. H. Bell of the United States Marine Corps. Commander Bainbridge presented a communication in which he emphasized the efforts being put forth in the United States to secure the meeting at Washington, in 1935, of the eighth International Congress of Military Medicine. It appears, furthermore, that the heads of the medical departments of the army, the marine and public health are working to secure the collaboration of the United States government for the holding of the congress at Washington in 1935. The permanent committee of the Congrès internationaux de médecine et de pharmacie militaires held several meetings concerning the seventh congress, to be held at Madrid, May 29, 1933.

The Belgian League of Dental Hygiene

The Ligue belge d'hygiène dentaire, created at the close of the International Exposition of Dental Hygiene, in August, 1930, at Brussels, has about completed its organization. Established on the initiative of the Association générale des dentistes de Belgique, it makes an appeal to all practitioners, stomatologists, dentists, and physicians interested in social hygiene—pediatricians and school health officers. The league has secured the patronage of the chief social organizations, which are continuing to give it the support that they gave to the congress. While the launching of a program requires time because of the need of collecting funds and equipment, it has been possible to organize some activities. Thanks to the aid of similar foreign organizations, the league was able to maintain for a year, in the quarters placed at its disposal in the Palais Mondial, a demonstration of dental hygienic propaganda. The original collections having been returned to the owners, the material is now rather reduced, but the league has been able to maintain a small nucleus and hopes to be able to develop it rapidly. In collaboration with the Red Cross of Belgium, it publishes at present various tracts in promotion of dental hygiene.

BUCHAREST

(From Our Regular Correspondent)

June 17, 1932.

The Organization of Public Care of Children

Although there are in Rumania several laws, enacted in 1910, 1921, 1926, 1929 and 1930, relating to the protection of infants and children, they are inadequate to modern conditions. This is partly due to the undisciplined public and partly to lax enforcement of the laws. Another handicap to obtaining the full benefits from a well organized children's protection campaign is that the number of outlying organizations is small and they are unequally distributed in the different regions; there is no close cooperation between state and private protection of children; finally, the expenses are high: 163,000,000 lei yearly, about a million dollars.

These facts awakened the thought to lay the foundation of a new organization. At a meeting recently, it was resolved that the leaders of the present organization appeal to the government and suggest the passing of a law which shall establish the status of children really needing care, of whom there are about 15,000 in the land. The next step should be to organize a central bureau in the ministry of public health for all the ramifications of children's protection. In every one of the twelve principal towns and cities of Rumania there should be a children's protection central organization which would have to deal with social service, the establishing of children welfare homes, the appointment of traveling instructors to villages suitable for the purposes of children's colonies, and the establishment of children's hospitals and obstetric wards. Thus it would be possible to carry on children's care and protection work for about 133,000,000 lei yearly. The sum represents only one eighth of the sum spent in France for the same purpose, in spite of the fact that France's population is only two and a half times as great as that of Rumania. According to Dr. I. Nemoianu, an apostle of the cause of the care of children, the contemplated organization would shelter from 12,000 to 36,000 children annually, afford about 400,000 medical consultations and assist about 15,000 mothers, and sponsor between 300 and 400 lectures.

Calmette's Tuberculosis Vaccine

There is no law in Rumania which makes the use of B C G compulsory, yet at present antituberculosis vaccinations are being done in forty-eight towns and cities and in eight district dispensaries. The number of babies already vaccinated amounts to about 70,000.

The vaccinations, in general, are well tolerated. While the general mortality rate of nonvaccinated children has amounted to from 16.6 to 25 per cent, the rate for those vaccinated varies from 14.4 to 7.3 per cent. Among 17,535 children who were closely observed during 1929, there were 1,005 infants born and brought up in a tuberculous environment; the tuberculosis mortality rate of the latter could be established at 2.1 per cent. On the other hand, the rate among nonvaccinated ones amounted to between 15 and 30 per cent. In Bucharest, the general mortality rate of infants under one year (18 per cent) fell to 8 per cent among the vaccinated children. The Rumanian pediatric authorities unanimously believe that B C G should be given to all infants.

Exanthematic Typhus in Rumania

Typhus exanthematicus was quite unknown in Rumania in prewar times. It appeared first in 1917 and then sporadically and only in the vacinity of Bessarabia, then a part of Russia. Some sporadic cases occurred also in the provinces of Muntenia and Moldova, but it could be established with certainty that these cases affected in the stage of incubation persons coming from infected places.

The cause of the Bessarabian outbreak is easily found: the severe poverty prevailing all over Bessarabia; unhygienic, overcrowded dwellings; lack of personal and general cleanliness; bad nutrition; fresh infection brought continually by refugees coming from Russia; lack of means to combat the scourge, and last but not least the indolence of the public health staff, the members of which are not intelligent enough to perform their important duties. The incidence of the disease during the past autumn and winter was as follows: In October, 1931, the number of cases amounted to 6, in November to 11, in December to 34, in January, 1932, to 67, in February to 89, and in March to 61.

THE NETHERLANDS

(From Our Regular Correspondent)

July 6, 1932.

The Cinchona Monopoly

The cultivation of cinchona was taken up at the May, 1931, meeting of the permanent committee of the Office international d'hygiène publique. A reference was made to the alleged abuse of the Dutch "monopoly" of quinine. Dr. De Vogel, former chief inspector of the public health service in the Dutch East Indies, has published an article calling attention to the critical period during which the cultivation of cinchona in Java was menaced by speculations that caused unheard-of fluctuations in the price of cinchona bark. The government of the Dutch East Indies suggested a solution of the problem that led to the present agreement. The arrangement that has been made is fortunate; otherwise the ruin of the private cultivation of cinchona in Java would have brought about a scarcity of quinine.

The department of agriculture realized that the task associated with the government's cultivation of cinchona should include, above all, scientific research and the collection of information. One could not charge it also with the task of supplying the world's needs in quinine. It was clear that that was the task of private industry. The management considers the stability of prices the basis that will permit the solid establishment of an industry, capable of supplying all the demands that the growing need of quinine would create. This price stability could not be maintained except on the basis of an equilibrium between consumption and production.

The department of agriculture succeeded in convincing the planters' association of the importance of an understanding with the manufacturers of quinine by virtue of which the producers of cinchona bark would be certain of a market the volume of which could be fixed over a period of years. The manufacturers would be assured of regular supplies of cinchona

bark, for which they would pay a price that would be in relation to the current price of quinine.

As a result of this action the speculators were prevented from getting possession of the product, but there was a danger that this "community of interests" would abuse its power by raising the price to a point at which quinine would be unavailable to the majority of patients with malaria. The government plantations supply about 10 per cent of the entire production of cinchona bark in the Dutch East Indies. The association was therefore interested in getting control of this supply. The government did not wish to subscribe to the arrangement other than on condition that each participant would promise to cooperate in furnishing quinine at a reasonable price and with the right reserved to withdraw within a year if it thought that the agreement was an obstacle to the supplying of malarial regions with quinine at a reasonable price. This stipulation was incorporated in the agreement in article 117.

The government has never tried to reserve for its own subjects, by special laws, this advantageous position. On the contrary, on several occasions, the government of the Dutch East Indies has furnished plants and selected seed to colonial powers that planned to introduce within their domains the cultivation of cinchona. When requested, it has given generously to other governments advice and information based on the results of research at its experimental plantation, and it has allowed other nations to profit from its experience acquired after great efforts embracing a period of more than seventy-five years.

Our success has sometimes been attributed to the favorable conditions for the cultivation of cinchona, associated with the soil and climate of the archipelago. Be it so; our laws throw open our territory completely to foreign enterprise, under the same conditions that they impose on our nationalists.

There is in our territory a large cinchona plantation belonging to the Italian government, called Chibitoe, which almost equals in extent our government plantation. It appears established that the government of the Dutch East Indies, in assuming the initiative to bring about close collaboration between the planters of cinchona and the manufacturers of quinine, saved private cultivation of cinchona from ruin and assured the world a supply of quinine. In 1851, the first attempts were made to transplant cinchona from South America to Java. It was not as a speculation but as an act of humanity that the government of Netherlands assumed responsibility for the carrying out of this enterprise.

The Health of Cement Workers

In the *Nederlandsch Tijdschrift voor Geneeskunde*, Van Bemmel has published an article in which he states that the extension of the cement and concrete industry has given rise in the Netherlands to fear for the health of the workmen. He comments on the results of an inquiry of the Netherlands bureau of labor inspection in 1930 and at the beginning of 1931.

Cement contains practically no free silica. After many years' work in the cement industry, the lungs have not usually undergone changes of a disquieting nature. Of 469 workmen employed in the cement factories or in the building industries, more than two thirds of whom had had more than five years of experience, there were found seventy-one slight disorders of the respiratory tracts (rhinitis, laryngitis, acute bronchitis); twenty-six cases of chronic bronchitis (or emphysema); eighteen cases of pneumonoconiosis, ten of which were discovered solely by a physical examination, five by a physical examination together with radiography, and three by radiography, and sixteen cases of tuberculosis without pneumonoconiosis. Other pathologic disorders found were acne, furunculosis, conjunctivitis, and the like. The pneumonoconiosis diagnosed by radiography had never reached the second stage.

The results of the inquiry made in the Netherlands confirmed those made elsewhere; namely, that the disorders caused by cement dust have a slight importance. If greater precautions are to be taken, they should be more in the improvement of the methods of work than in the individual measures of protection.

The Crusade Against Malaria

The commission on the antimalarial campaign in North Holland has published its report for 1930. The campaign actively followed for the destruction of mosquitoes in the dwellings has achieved success. The population is now recognizing the importance of this means of combating malaria. More than 13,000 families were visited and given a demonstration, during the year, the special film having been shown many times.

The number of cases reported in 1930 was 2,112, a morbidity of 42.3 per 10,000 inhabitants, as against 53, 35.4 and 34.5, respectively, for the three preceding years. More physicians have shown interest of late in the work of the commission. An indication may be derived from figures showing the notifications made monthly per physician: 9.7 in 1930 as against 8.4 in 1929. All these cases were verified by the presence of plasmodia in the blood.

JAPAN

(From Our Regular Correspondent)

June 31, 1932.

Health Insurance

With the hard times, health insurance, clinics, and a health union coming into being one after another, medical practitioners have been placed in a difficult situation throughout the country. The enforcement of the government health insurance has shown the people that physicians are able to treat patients for much smaller fees and the demand for smaller bills has been urgent. The demand not being met, some people applied to the government last year for a permit to establish a health union in Tokyo. This union is going to establish a hospital of its own with funds collected from members, who can have as many shares as they please at a cost of $5 each. This hospital is to be managed by a nonpractitioner. Shareholders or their families may be treated here.

There are about ten industrial guilds that have independent hospitals. This health union is almost the same in principle as the one mentioned before. For many reasons the state has hesitated but at last has permitted the formation of this union, against the strong opposition of the Japan Medical Association. A local medical association courageously fought against the industrial guild. It tried to require the guild doctors to obey the association's rules, which in some points are incompatible with service in such a hospital. A sensational lawsuit took place between the association and the guild doctors. The court decided that the medical association had no right to bind the doctor when he is working on a salary in a guild hospital, even if he is a member of the association. The plaintiff appealed to the court of appeal but lost. The Japan Medical Association has no longer any means to protect the majority of its members against this tendency of organized health unions. In a certain city, the practitioners all united to establish a private health insurance, which was not, of course, as financially beneficial as that of the government. In almost all the large cities the three kinds of hospitals or unions or insurance systems are going to fight it out with one another. Until the government health insurance enlarges its system so as to include all people in every station of society, no better solution will be found. A rapid change, at any rate, is expected to appear in medical circles in Japan.

Mountain Recreation for Delicate Schoolboys

The Imperial School Hygiene Society will open again the mountain health school for delicate children during the summer vacation this year. These children had been sent to the seaside sanatorium until year before last. Last year, for the first time, they were brought to the mountains, more than 3,000

meters above sea level, in the highland provinces near the Japanese Alps, that a comparison of the effect of the mountain school and the seaside school might be made. The mountains were found to be much more effective than the seaside. Three hundred delicate children from elementary schools in Tokyo and Yokohama, divided into two parties, were taken to the mountains for two weeks, and after they returned home they were carefully examined for six months. Among the boys and girls taken there, the boys of the sixth grade have increased, on the average, 2.6 cm. in height and 2.4 Kg. in weight, which is a remarkable increase when compared with that of ordinary boys of that age, 2.8 Kg. The girls of the same class and of the same age have shown an increase of 3.5 cm. in height and 3.2 Kg. in weight, while the ordinary girls' average increase is 3.8 Kg. The fifth grade boys (average age, 11) have increased 2.8 cm. in height and 3.9 Kg in weight, while the ordinary boys of the same class increase 2.2 Kg. in weight. As for the girls taken there of the same age, their increase was 4.4 cm. in height and 3.7 Kg. in weight, which is an astonishing increase, if it is compared with that of other ordinary healthy girls, whose average increase is 2.7 Kg. in weight. The one year's experiment is not altogether sufficient to prove that mountain recreation is better than that at the seaside, but at least it has given some such indication.

Antidysentery Vaccination for Children

In the suburbs of Tokyo, the metropolitan police bureau sought to prevent children's dysentery from spreading by means of administration of a vaccine for internal use prepared at the Bacteriologic Research Institute. Types I and II and the "Ohara" bacillus are used to make tablets. The process is as follows: Cultures of the bacilli are mixed at the ratio of 200 mg. of bacilli to 1 cc. of a diluted formaldehyde-sodium chloride solution (1 part of solution of formaldehyde U. S. P. to 25 parts of physiologic solution of sodium chloride). It is left for forty-eight hours at 37 C. After the death of the bacilli is assured, 90 cc. of the mixture is added to 270 Gm. of lactose, 130 Gm. of amylogen, and some mint-oil. After being well mixed, it is strained and dried for eighteen hours at a constant temperature of 45 C. One gram of such a powder contains 45 mg. of bacilli of the three types. One tablet is made of 2 Gm. of this powder. Children between 3 and 5 years of age are given one tablet a day on an empty stomach.

In 1931, 119,904 children were so treated, and among them 535 had dysentery and 222 died. In the same locality 430,499 children of the same age had not been given this preventive, and among them 4,553 were attacked by this disease and 2,235 died of it. Encouraged by this result, the bureau gave this preventive to more than 500,000 children in May and June this year.

Memorial to the Late Baron Kitasato

Friends and disciples met the other day to consider the establishing of a memorial to the late Dr. Kitasato, the most generally recognized benefactor in medical circles in Japan. They came to a unanimous decision to establish a memorial library of medicine in Tokyo, and Count Kiyoura, one of the elder statesmen, was elected chairman of the committee to carry out the plan. As this kind of medical library will be the first one in this country, it is much desired that it be established as soon as possible.

School of Hygiene and Public Health

Owing to the world-wide depression, the offer from the Rockefeller Foundation to the school of hygiene and public health to be built in the near future has been postponed until better economic conditions return. But the candidates for membership who are in America it is believed will continue their studies. The establishment of the school, it is now hoped, will go ahead with funds from the state independent of the receipt of funds from the Rockefeller Foundation.

Marriages

CHARLES EDWARDS PARSONS, Twillingate, Newfoundland, to DR. MALVINA ELIZABETH MOORE of Oakland, Calif., June 30.

HAROLD BENJAMIN SMITH, North Wilkesboro, N. C., to Miss Mary Richardson McLeod of Cheraw, S. C., June 11.

JOSHUA JACK GRIZZARD, JR., to Miss Ruth Corinne Cleek of Hot Springs, Va., in Richmond, June 22.

FREDERICK LIONEL FINCH, JR., to Miss Melba Mayhew Gravely, both of Richmond, Va., June 23.

JAMES EARLE WHEELER, Belleville, Ill., to Miss Catherine Louise Davis of Beloit, Wis., June 18.

DELBERT T. SAFFER, Aldie, Va., to Miss Martha Garnett Gresham of Newport News, May 15.

EDWARD A. YURICK, Cleveland, to Miss Mary Josephine Hodock of Byesville, Ohio, June 27.

THOMAS MEREDITH WINN, Covington, Va., to Miss Violet Gary of Kenbridge, June 30.

ROSHIER W. MILLER to Mrs. Sallie Knight Hill, both of Richmond, Va., July 6.

JUSTIN E. MCCARTHY to Miss Mary McConn, both of Cincinnati, April 5.

Deaths

Francis William Alter ⊕ Toledo, Ohio; Bellevue Hospital Medical College, New York, 1896; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; director and past president of the Toledo Academy of Medicine; past president of the Lucas County Medical Society; medical superintendent of the Alter Eye, Ear, Nose and Throat Hospital; for many years on the staffs of the Mercy Hospital and St. Vincent's Hospital; aged 65; died, July 19, in the Toledo Hospital, of carcinoma of the colon.

Paul J. Gelpi ⊕ New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1896; past president of the Louisiana State Medical Society and the Orleans Parish Medical Society; formerly professor of genitourinary diseases and cystoscopy, Graduate School of Medicine, Tulane University of Louisiana; on the visiting staff of the Charity Hospital and the Hotel Dieu Hospital; aged 57; died, July 19, in Bay St. Louis, Miss., of chronic myocarditis and arteriosclerosis.

Karl W. Doege ⊕ Marshfield, Wis.; Medical Department of Western Reserve University, Cleveland, 1890; member of the House of Delegates of the American Medical Association in 1910; past president of the State Medical Society of Wisconsin; fellow of the American College of Surgeons; president of the Marshfield Clinic; surgeon in chief at St. Joseph's Hospital; aged 65; died, June 28, of heart disease.

Neal Luther Hoskins ⊕ Detroit; Detroit College of Medicine, 1905; associate professor of medicine at his alma mater; fellow of the American College of Physicians; consulting physician to St. Mary's Hospital; on the adjunct staff in the department of medicine, Harper Hospital; visiting physician to the Detroit Tuberculosis Sanitarium; aged 55; died, July 21, of carcinoma of the sigmoid.

Joseph Angevine Turner, Columbus, Ohio; Starling-Ohio Medical College, Columbus, 1911; member of the Ohio State Medical Association; served during the World War; on the staffs of the Columbus Radium Hospital, White Cross Hospital, St. Ann's Hospital and Grant Hospital; aged 44; died, June 25, of cirrhosis of the liver, hypostatic pneumonia and heart disease.

Frank A. Jacobson, Newburgh, N. Y.; New York Homeopathic Medical College and Hospital, 1888; member of the Medical Society of the State of New York; formerly member of the board of health and board of education; on the staff of St. Luke's Hospital; aged 68; died, July 9, in the Presbyterian Hospital, New York, of carcinoma of the esophagus.

Charles Sumner Holden, Attleboro, Mass.; Harvard University Medical School, Boston, 1883; member of the Massachusetts Medical Society; for ten years member of the state legislature; formerly member of the board of health of Attleboro; aged 76; died, July 3, in the Sturdy Memorial Hospital, of hypertrophy of the prostate and cystitis.

Benjamin James Baldwin, Montgomery, Ala.; Bellevue Hospital Medical College, New York, 1877; member and past president of the Medical Association of the State of Alabama; for twenty-seven years president of the board of education of Montgomery; aged 75; died, July 10, in St. Margaret's Hospital, of acute intestinal obstruction.

Philip Herrin, Villa Grove, Ill.; Barnes Medical College, St. Louis, 1903; member of the Illinois State Medical Society; secretary and past president of the Douglas County Medical Society; veteran of the Spanish-American and World wars; formerly bank president and mayor; aged 54; died, July 18, of cerebral hemorrhage.

Louis Leon Frisque, Chicago; Northwestern University School of Medicine, Chicago, 1911; member of the Illinois State Medical Society; fellow of the American College of Surgeons; on the staff of the Ravenswood Hospital; aged 49; died, July 27, in the Sacred Heart Sanitarium, Milwaukee, of encephalomalacia.

James Bartley Given, Jr. ⊕ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1921; fellow of the American College of Surgeons; on the staffs of the Carson C. Peck Memorial Hospital, Brooklyn Hospital and St. John's Hospital; aged 36; died, July 25, of heart disease.

Sylvan De Nux, Marksville, La.; University of the South Medical Department, Sewanee, Tenn., 1900; member of the Louisiana State Medical Society; member of the state board of health; coroner of Avoyelles Parish; aged 52; died, July 5, in the Baptist Hospital, Alexandria, of septicemia.

Roland Curtin Evans, Leighton, Ala.; University of the South Medical Department, Sewanee, Tenn., 1905; member of the Medical Association of the State of Alabama; veteran of the Spanish-American and World wars; aged 56; died, June 27, in the Colbert County Hospital, Sheffield.

Joseph E. Spatz, Medford, Ore.; Hahnemann Medical College and Hospital, Chicago, 1885; formerly member of the state board of health of Nebraska; for nine years member of the board of education in Fairfield, Neb.; aged 72; died, May 7, of organic heart disease.

George Albertson Parker, Jr., Newton, Pa.; University of Maryland School of Medicine, Baltimore, 1910; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 49; died, July 15, in a hospital at Philadelphia.

Charles A. Hamilton, Waterbury, Conn.; University of Vermont College of Medicine, Burlington, 1886; member of the Connecticut State Medical Society; aged 83; died, July 12, of injuries received when his automobile went over an embankment.

Thomas Collins Stevenson Marshall ⊕ Washington, D. C.; Howard University School of Medicine, Washington, 1883; vice dean emeritus and emeritus professor of pathology at his alma mater; aged 76; died, June 29, of cerebral hemorrhage.

William Franklin Harpel, Chicago; Hahnemann Medical College and Hospital, Chicago, 1905; formerly professor of physiology and biology at his alma mater; aged 75; died, June 10, of chronic myocarditis, prostatitis, cystitis and arteriosclerosis.

Seaborn Jennings Fuller, Magazine, Ark.; University of Louisville (Ky.) School of Medicine, 1891; member of the Arkansas Medical Society; fellow of the American College of Surgeons; aged 63; died, April 7, in Little Rock, of heart disease.

Samuel G. Burkholder, Reading, Pa.; Harvey Medical College, Chicago, 1898; Northwestern University Medical School, Chicago, 1899; member of the Medical Society of the State of Pennsylvania; aged 61; died, May 10, of heart disease.

Joseph Daniel Tuten, Lake Charles, La.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; member of the Louisiana State Medical Society; on the staff of St. Patrick's Sanitarium; aged 54; died, July 13, of heart disease.

Samuel Streghorn Beakley, San Antonio, Texas; University of Nashville (Tenn.) Medical Department, 1900; member of the State Medical Association of Texas; aged 63; died, July 4, in the Nix Hospital, of acute dilatation of the heart.

Edmund I. Hinkle, Burlington, Ind.; University of Louisville (Ky.) School of Medicine, 1894; member of the Indiana State Medical Association; aged 63; was found dead in his automobile, July 3, of heart disease.

John Conrad Anderson, Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1905; member of the Indiana State Medical Association; aged 73; died, July 3, of uremia and chronic nephritis.

Christopher Gadsden Hay, Savannah, Ga.; University of Georgia Medical Department, Augusta, 1885; Confederate veteran; aged 84; died, July 2, of chronic interstitial nephritis and myocardial insufficiency.

James Bell Goddard, Eau Claire, Wis.; Rush Medical College, Chicago, 1888; member of the State Medical Society of Wisconsin; aged 75; died, June 25, in Freeport, Ill., of carcinoma of the throat.

John Sedgwick Dean, Glendale, Calif.; University of Michigan Medical School, Ann Arbor, 1889; aged 68; died, May 6, of sclerosis of the coronary artery, angina pectoris and diabetes mellitus.

Edwin Frank Wood, Rochester, N. Y.; University of Buffalo School of Medicine, 1917; member of the Medical Society of the State of New York; aged 47; died, July 10, of heart disease.

Cornelius C. Vanderbeck, St. Louis; Jefferson Medical College of Philadelphia, 1872; member of the Missouri State Medical Association; aged 80; died, June 15, of cerebral hemorrhage.

William Edward Wright, Fairfield, Ala.; Birmingham Medical College, 1907; member of the Medical Association of the State of Alabama; aged 48; died, July 13, of pulmonary tuberculosis.

Audley Emmet Nelson, Sidney, Iowa; Jefferson Medical College of Philadelphia, 1897; aged 64; was instantly killed, June 13, when the automobile in which he was driving overturned.

John Constantine Bialas ⊕ Utica, N. Y.; Boston University School of Medicine, 1916; on the staff of the Memorial Hospital; aged 39; died, June 28, of periprostatic abscess and embolism.

Robert Perry Jones ⊕ Baton Rouge, La.; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1898; aged 59; died, May 23, of myocarditis and nephritis.

William C. Mitchell, Philadelphia; Jefferson Medical College of Philadelphia, 1893; aged 79; died, June 24, in the Jefferson Hospital, of cerebral hemorrhage and diabetes mellitus.

Robert Patrick, Woodville, Miss.; Medical Department of the University of Louisiana, New Orleans, 1873; aged 86; died, May 28, of hypertrophy of the prostate and nephritic toxemia.

John S. B. Woolford, Roswell, N. M.; University of Maryland School of Medicine, Baltimore, 1896; fellow of the American College of Surgeons; aged 60; died, July 4, of uremia.

Jean Samuel Holloway, Phoenix, Ariz.; Indiana University School of Medicine, Indianapolis, 1911; aged 44; died, June 29, in a hospital at Los Angeles, of hemorrhage of the lungs.

Benjamin F. Armbruster ⊕ Milwaukee; Hospital College of Medicine, Louisville, Ky., 1902; on the staff of St. Luke's Hospital; aged 59; died, July 4, of cerebral hemorrhage.

Charles Clinton Cracraft ⊕ Claysville, Pa.; Jefferson Medical College of Philadelphia, 1883; secretary of the Washington County Medical Society; aged 76; died, May 13.

Henry Whipple Allport, Chicago; Cornell University Medical College, New York, 1899; served during the World War; aged 67; died, July 27, of angina pectoris.

Robert Lee McLellan, Eagle Lake, Texas; Medical Department of the University of Alabama, Mobile, 1897; aged 61; died, July 8, in Smithville, of myocarditis.

Eber Devello McKinley ⊕ Alamogordo, N. M.; Central College of Physicians and Surgeons, Indianapolis, 1904; aged 55; died, May 17, of coronary embolism.

Ira Calvin Hoffman, Aliquippa, Pa.; College of Physicians and Surgeons, Baltimore, 1915; also a druggist; aged 56; died, July 18, of carcinoma of the stomach.

Robert James Haworth, Vancouver, B. C., Canada; University of Manitoba Faculty of Medicine, Winnipeg, Manit., 1892; aged 78; died in March.

Hugh J. Needham, New Albany, Ind.; Pulte Medical College, Homeopathic, Cincinnati, 1881; aged 89; died, June 23, of chronic nephritis.

William Raymer, Beaver Falls, Pa.; Homeopathic Hospital College, Cleveland, 1878; aged 76; died, June 28.

John G. Slappy, Jeffersonville, Ga.; Atlanta Medical College, 1875; aged 78; died, June 27.

Bureau of Investigation

CROXON CREAM

An Alleged Depilatory from Koremlu Antecedents

Readers of this department of THE JOURNAL will remember what has been published both recently and some months ago regarding a pernicious depilatory known as "Koremlu," which had for its active ingredient thallium acetate. As was pointed out in the last article on Koremlu, the number of cases of serious poisoning, with resultant damage suits brought against the exploiters, resulted in Koremlu, Inc., filing a voluntary petition in bankruptcy, listing liabilities over two million dollars and assets under three dollars.

A few months ago the Bureau of Investigation began receiving inquiries regarding a newcomer to the depilatory field, sold under the trade-marked name "Croxon Cream" by Croxon, Inc. The address of Croxon, Inc., was Suite 1368, 20 West 43d Street, New York City. Investigation proved this to be the same office as that occupied by Koremlu, which used the address 11 West 42d Street, the building in which the two concerns were housed running through from 42d Street to 43d Street.

It is reported that Croxon was incorporated in January, 1932, with an authorized capital of 2,000 shares of common stock at no par value. Its president was given as A. W. Lublin. This, presumably, is the same A. W. Lublin who signed letters for the Koremlu concern as its vice-president.

Croxon Cream is advertised in much the same way that Koremlu Cream was advertised. In fact, the style and illustration used in magazine "copy" of Koremlu and Croxon are almost identical. Croxon Cream is sold under the definite claim that it will *permanently* remove hair. If one is to believe the booklet on Croxon Cream, "thousands of experiments" were made in the alleged research that led to the discovery of this marvelous preparation. To quote from the advertising booklet that goes with the trade package:

"The principle underlying the Croxon treatment is entirely new. A combination of gentle chemical reactions *dissolves both hair and its root* [Italics ours.—ED.] without injury to the health and vitality of the skin, for they are similar to the reaction constantly taking place in all living cells."

"Croxon is the perfect solution to the problem of superfluous hair. It proves a simple, positive and permanent method, guaranteed to *harmlessly destroy, wherever used, both hair and root* [Italics ours.—ED.] so that no unwanted hair can ever grow there again."

". . . it [Croxon Cream] does not affect anything but the hair and hair root."

At this point our readers may be reminded of the unfortunate fact that drug products sold for cosmetic purposes, and not for the treatment or alleviation of disease, are free from the restrictions imposed by the national Food and Drugs Act. That is why cosmetic manufacturers can falsify with impunity in statements accompanying the trade package. Referring again to the alleged scientific research on which the creation of Croxon Cream is said to be based, the public is told, in a page devoted to the statement, that:

"Professional ethics forbid the publication of the names of the doctors and scientists who made Croxon possible for your use."

Last May, Croxon, Inc., wrote to a woman who had inquired about the possible harmfulness of the preparation:

"As Croxon Cream is a product of one of the largest hospitals in New York City and the research work has been done by dermatologists and toxicologists connected with the hospital, we do not think any further evidence is necessary."

In the same letter, Croxon, Inc., answering its correspondent's question as to where the company had obtained her name, wrote:

"As to how we got your name, will say that we rent lists of names from manufacturers of cosmetics and other preparations. We probably found your name on one of these lists, as a good many houses sell or rent their lists of names."

As long ago as last May, the National Better Business Bureau wrote to the Bureau of Investigation, asking for any information that might be available on Croxon Cream. At the same time they stated that they had seen a certificate from Helene Lemberger, Ph.D., Department of Biochemistry, New York Post-Graduate Medical School and Hospital, that read as follows:

"I hereby certify that the research investigation upon which the formula of Croxon Cream has been based, demonstrates that:

"(*a*) It contains no compounds that are toxic as embodied in this preparation and when applied as directed.

"(*b*) It removes superfluous hair when applied as directed.

"(*c*) It prevents the regrowth of the hair when applied as directed over a period of one year.

"It is my understanding that neither this letter, my name, nor the name of this institution will be used in advertising."

Dr. Lemberger's testimonial for Croxon Cream was referred to incidentally in the last article that was published in this department of THE JOURNAL on Koremlu. Shortly after publication the Bureau of Investigation received a letter from John A. Killian, Ph.D., Director of the Department of Biochemistry of the Post-Graduate Medical School and Hospital.

Forever free from
UGLY HAIRS
on face, neck, limbs and under-arm
Croxon Cream permanently destroys both hair and roots in 3 to 6 months
Absolutely guaranteed
Now at last the natural beauty of your face, arms and legs need no longer be blemished by ugly, superfluous hair. For scientists have finally triumphed over this age-old problem and have perfected a remarkable cream that destroys both hair and root—positively, harmlessly and entirely without pain, hair-pulling, irritation, or unpleasant odor.
Croxon is as easy to use as cold cream. Simply spread it on. Croxon Cream destroys the hair faster than it can grow in again and, after a number of applications, the hair root, itself, is actually destroyed and can therefore never grow hair again.
Do not confuse Croxon Cream with other products—there is nothing else like it. And it is absolutely guaranteed.
Get Croxon Cream at your department store. Or use the Free Sample coupon.
FREE SAMPLE
CROXON CREAM
SEND FOR FREE SAMPLE—Use it . . . and see for yourself.
CROXON, INC. 20 W. 43d St., New York, N. Y.
Cream, for permanently

Reproduction of advertisement of Croxon Cream appearing in recent issues of some national magazines.

In his letter Dr. Killian stated (1) that Dr. Lemberger's work on Croxon Cream was not a part of the business of the laboratory of the Department of Biochemistry, (2) that the use of official stationery for the expression of her opinions was a violation of the rules of the laboratory and (3) that as Dr. Lemberger's letter lacked his signature as Director of the Department, it was not an official report.

All this made interesting reading, because in the meantime evidence had been received by the Bureau of Investigation that indicated that Dr. Killian himself had done work on Croxon Cream. It appears that Charles C. Johnson, treasurer of Croxon, Inc., in talking to someone who had inquired of him regarding the possible toxicity of Croxon Cream, had declared that Croxon Cream could not be poisonous because it had been tested and certified by the Post-Graduate Hospital and that Dr. Killian had done the work.

In acknowledging Dr. Killian's letter relative to the unofficial character of Dr. Lemberger's testimonial, he was asked to

furnish, either direct or through Dr. Lemberger, scientific evidence for the claims Dr. Lemberger had made to the effect that Croxon Cream (1) "removes superfluous hair when applied as directed" and (2) "prevents the regrowth when applied as directed over a period of one year."

Dr. Killian was also asked whether the New York Post-Graduate Medical School and Hospital had, as such, done any work on Croxon Cream or if Dr. Killian himself had done any work on the preparation and, if he had, whether that work was done in his capacity as Director of the Department of Biochemistry of the New York Post-Graduate Medical School and Hospital, or merely as a private chemist. Dr. Killian replied to the questions, thus:

"Dr. Helene Lemberger is not in this laboratory at the present time and will not return to it. I shall answer the questions concerning the evidence upon which she based her statements in the letter referred to above. Her statement that the product called Croxon Cream removed superfluous hair was based upon observations of guinea-pigs receiving daily applications of the product, and also upon human subjects receiving applications of the cream on arms, legs and in the axillae. Secondly, as far as I can determine from her experimental data, she had, at the time the letter was signed (April 12), no evidence that it will prevent the regrowth of hair when applied as directed over a period of one year.

"In answer to the question asked in your letter to me re Croxon Cream, I wish to say that beginning May 28th, 1932, an investigation of Croxon Cream has been carried on in the Department of Biochemistry under my supervision. The object of this investigation has been to determine (a) whether Croxon Cream will remove hair from experimental animals, and (b) to determine whether Croxon Cream, when applied as a depilatory cream, produces any toxic effect. This investigation has been, since May 28th, a part of the business of the laboratory. No report has been issued to date on our results. When the experiments have been completed to our satisfaction, the results will be published to the medical profession first. In this investigation we are following a plan similar to that adopted for the investigation of Koremlu. Other phases of the investigation of Croxon Cream are being worked out in other laboratories."

From this it will be seen that neither Dr. Lemberger's work nor Dr. Killian's work furnishes evidence for the claim that Croxon Cream "dissolves both hair and its root" so that "no unwanted hair can ever grow there again."

It may not be inappropriate to remind our readers at this point that it was Dr. Killian who furnished the elaborate report for the Scott Paper Company relative to the alleged virtues of "Scot Tissue" as compared with the (also alleged) vices of most of the other toilet papers on the American market.

Because of the close connection, at least in its genesis, between Croxon Cream and Koremlu Cream, it seemed desirable to find out as early as possible whether Croxon Cream might be another thallium acetate preparation. For that reason the A. M. A. Chemical Laboratory was asked to analyze the product. Their report follows:

LABORATORY REPORT

"An original jar of Croxon Cream (Croxon, Inc., 20 West 43d Street, New York), purchased on the open market (Price $10) was submitted to chemical examination.

"The jar contained 94.6 Gm. (approximately 3 ounces) of a cream-colored ointment, almost odorless. Qualitative tests indicated the presence of sodium, zinc and boron compounds, oxygen in the form of peroxide, and petrolatum. Heavy metals (such as mercury, lead, arsenic, antimony, etc.), alkaline-earth metals (such as barium, strontium, calcium and magnesium), chlorides, phenol or salicylic acid, sulphur compounds (including sulphides) were not found. Petrographic examination of the solid material in the ointment revealed a substance similar in the optical-crystalline properties to sodium perborate, zinc peroxide and zinc oxide. Quantitative determinations yielded the following:

Petroleum-benzin extract	68.0 per cent
Residue insoluble in petroleum benzin	31.0 per cent
Ash (750°)	20.4 per cent
Sodium (Na^+)	2.5 per cent
Boron (B)	1.1 per cent
Zinc (Zn^{++})	10.6 per cent
Total titratable oxygen (peroxide oxygen)	2.8 per cent
Titratable oxygen in water insoluble portion	1.3 per cent
These results may be calculated to:	
Sodium perborate ($NaBO_3\ 4H_2O$)	15.0 per cent
Zinc peroxide (ZnO_2)	7.6 per cent
Zinc oxide (ZnO)	6.8 per cent

"From the foregoing, it may be concluded that the product contains essentially 15 per cent of sodium perborate, 7.6 per cent of zinc peroxide, and 6.8 per cent zinc oxide. Zinc peroxide is seldom pure but generally a mixture containing from 45 to 55 per cent zinc oxide. For practical purposes it appears, therefore, that the product consists essentially of approximately 15 per cent sodium perborate and 15 per cent commercial zinc peroxide incorporated in a petrolatum base."

From this it appears that Croxon Cream is essentially a mixture of sodium perborate, zinc oxide and zinc peroxide in a petrolatum base—three ounces (3 oz.) for ten dollars ($10). The amount of petrolatum, sodium perborate, zinc peroxide and zinc oxide found in a ten-dollar jar of Croxon Cream could be purchased at wholesale for less than 10 cents.

While Croxon Cream has none of the viciously dangerous elements found in Koremlu Cream, it is, as every dermatologist will recognize, quite worthless as a depilatory for either the temporary or the permanent removal of hair. What Croxon Cream will do, if rubbed into the skin from one to three times a day over a period of months as recommended, is to bleach the hair. The purchaser is told that it will be necessary to use Croxon Cream for from three to twelve months. As Croxon, Inc., get $10 for a three-ounce jar of Croxon Cream, the ingredients of which probably cost not more than a dime, will it make very much difference to the concern how many disappointed customers it may have if it can only get enough customers started on the three to twelve months' use?

Reverting again to Koremlu: It will be remembered that in the exploitation of Koremlu Cream, the Koremlu concern put out, as an accessory, what they called "Koremlu Wax." Purchasers of Koremlu Cream who were in a hurry to have the hair removed were urged to purchase the "wax" in addition to the "cream." In the case of Croxon Cream, those who, after purchasing a ten dollar jar and finding after weeks of use that the superfluous hair is as thick as ever, are told to purchase "Croxon Depilatory Powder."

Croxon Depilatory Powder is just another one of the sulphide mixtures. It is described as a dainty, harmless, pleasant and non-irritating product." In spite of a valiant but wholly unsuccessful attempt to cover up its odor with perfume, it smells, in fact, like rotten eggs and decaying cabbage (hydrogen sulphide). As to its harmlessness, it may, like any of the alkaline sulphides, if not used with the greatest of circumspection, not merely remove hair, temporarily, but also remove the skin. It is worth noting, too, that the Croxon booklet states that where the hair has been "burned off" with depilatories, the time over which Croxon Cream must be used will be greatly increased.

On the closing page of the Croxon Cream booklet, Croxon, Inc., publish an alleged guarantee to the effect that those who purchase and use Croxon Cream as directed "will be permanently relieved of all trace of superfluous hair." In this connection, it is worth bringing back to mind the "guarantee" that the Koremlu people published, to the effect that after using from $20 to $240 worth of Koremlu, if you were dissatisfied with the results, the Koremlu people would return your money. As Koremlu, Inc., is bankrupt, with less than $3 in the till and over $2,500,000 owing, how much is the guarantee worth?

Correspondence

INJURY TO FACIAL NERVE IN MASTOID OPERATION

To the Editor:—In mastoid operations the danger of injury to the facial nerve is apparent, and the anesthetist is requested to watch for any twitching of the muscles about the eyes or the face to safeguard this nerve from being injured unawares. With the usual sterile coverings it is very difficult to see the face with much certainty. I have for many years used the sense of touch for this purpose, which is much more certain, and easier of application, by placing the finger at the angle of the mouth on the buccinator muscle.

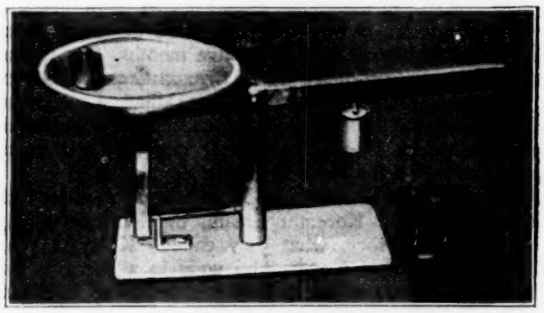
If the facial nerve is touched, contraction of these muscles is detected at once by the palpating finger, however slight the contraction may be.

JAMES G. POE, M.D., Dallas, Texas.
Baylor University Hospital.

SCALES FOR DIABETIC PATIENTS

To the Editor:—Charity patients in diabetic clinics seldom can afford to buy scales, yet weighed diets are conducive and at times indispensable to the treatment of diabetes. To supply this want, some of my patients in the diabetic section of the Falk Clinic, conducted by the University of Pittsburgh, constructed balance scales with metal picked out of the scrap piles, at the initial cost of 2½ cents. They are assembled by unemployed men and are calibrated to weigh within half a gram, by an expert, again unemployed.

A number of these scales were finished, as shown in the accompanying illustration, and distributed to deserving patients.



Balance for diabetic patients.

Beneficial results immediately became apparent, and in addition to the increased interest on the part of the entire group in their dietetic problems, patients were provided with an accurate means of weighing their total caloric intake regardless of their financial condition.

The social service department of the clinic has been requested to follow up those patients who have received such mechanical aids so that each set of scales will do maximum duty.

With the thought that others might wish to use this plan in solving similar problems, the matter is presented here.

J. WEST MITCHELL, M.D., Sewickley, Pa.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ENDOCARDITIS AFTER SCARLET FEVER

To the Editor:—In January of this year my son, aged 9 years, contracted scarlet fever. This left an endocarditis as a sequela. In spite of bed rest, a wholesome appetite and diet, and outward appearances of health, he persists in having a half degree of fever almost daily, and the systolic mitral lesion is gradually becoming more accentuated. For two weeks following tonsillectomy his condition seemed aggravated, his temperature being elevated from 1 to 1.5 degrees, and his pulse was correspondingly accelerated. I have had him on salicylates, streptococcus vaccines, iron tonics and sun baths, but this low grade process continues in spite of all effort and his apparent well being. I will be pleased to learn of any more therapy you might recommend in this case. Please omit name.

M.D., Iowa.

ANSWER.—It is possible that the endocarditis described is the result of a complicating rheumatic fever. This is an important distinction to make because joint pains and rheumatic nodules may aid in determining the state of activity of the process. With either causation the child's weight curve at this stage of the disease would be a helpful index of activity or the nonexistence of the latter. As the query suggests, the temperature curve is important also; but this should be recorded in the absence of salicylates, to be significant. Even then it is difficult to interpret a fever of half a degree this long after the onset of the child's illness. Opinions may be had on both sides of this question, but many clinicians would favor disregarding this amount of fever in the absence of salicylate medication in a child of this age. An electrocardiograph tracing for evidences of disturbed conduction not detectable clinically in any other way would be of considerable significance, if positive.

If the boy is gaining a little in weight and shows no evidence of active rheumatic fever or of active endocarditis, other than the half degree of fever, and the electrocardiographic tracing is normal, discontinuation of medication and a gradual resumption of activity for the patient may be recommended. As Dr. Herrick and others have pointed out, physicians have sometimes erred in the past in making more of an invalid out of such a patient than the necessities of the case demand.

The existence of evidence of activity on any of the scores mentioned would justify the continuation of bed rest. Rest and good food and other general hygienic measures are the most valuable parts of therapy of the active stage. The value of other forms of treatment remains highly problematic. The salicylates are favored if joint involvement is present, and some believe in their use for the endocarditis itself.

FILARIASIS OR ABNORMAL LYMPH CHANNELS

To the Editor:—A woman, aged 26, a nullipara, has a large edema of the right foot ascending and diminishing in size till just below the knee. No discoloration, redness or pain is present, nor is there impaired arterial circulation. The Wassermann test is negative. Blood counts are normal. There is no x-ray evidence of a pathologic condition of the bone and no sign of tuberculosis. The condition suggests a stasis in the lymphatics, although no enlarged lymph glands can be felt anywhere. The swelling has existed since her childhood, about twenty years, but has increased during the last half year. Several years ago in France she received punctate cauterizations at the metatarsophalangeal joints. She states that these resulted in some benefit at the time. Up to her sixth year she lived in French Guiana, and afterward in France. I was advised to look for filariae. Blood smears taken at different hours of the day or night did not show any microfilariae. I was further advised to make a Kondoleon operation and to look for filariae in biopsy specimens. Milroy's disease, I think, can be excluded, as this case is unilateral. What other conditions would you consider? If filariasis, what would be the treatment? I read about injections with chenopodium oil. What is the dosage and where can it be obtained sterilized? Is there any authority in this country on this subject to whom I could write for information? Please omit name.

M.D., California.

ANSWER.—The case, as outlined, suggests two diagnostic possibilities: (1) filarial elephantiasis, and (2) congenital abnormality of lymph or venous efferents from the right leg and foot. The history of residence for the first six years of life in an endemic filarial district, with edema coming on at the end of this time, is strongly in favor of filarial origin. This origin having been twenty years ago, one would expect the adult filariae to have died long since. The patient has presumably not been exposed to reinfection during the past twenty years. One would therefore expect that organic damage originated in the customary manner in the period of active parasitization and that the appearance of organic lymph obstruction and elephantiasis was coincident with disappearance of live adult filariae and microfilariae in the circulating blood. Under such conditions the proper treatment is surgical, a modified Kondoleon operation being performed in an effort to divert the lymph drainage into the deeper channels around the great blood vessels. The operation should be preceded by one or two weeks of elevation and constant pressure. As a routine, thick blood smears should be made at two hourly intervals for twenty-four hours and searched thoroughly for microfilariae, in the remote possibility of their still being present. Drug treatment is useless. Roentgenograms of the soft tissues around, above and below the knee should be taken in two planes in the effort to demonstrate calcified adult filariae. If these are found, their surgical removal should be undertaken before Kondoleon drainage is attempted. O'Connor, Golden and Auchincloss (*Am. J. Roentgenol.* **23**:494 [May] 1930) have demonstrated the value of this procedure.

Endemic elephantiasis is seen occasionally with no exposure to filaria-bearing mosquitoes but can be reduced to terms of mechanical obstruction from trauma, masses, earlier phlebitis or cellulitis, or streptococcus infection.

DELAY IN SPEECH FUNCTION

To the Editor:—What, if anything, can be done to develop the talking function of a child? The patient is a boy, aged 3 years, who seems to be normal in every way, with no defect of tongue, lips or vocal cords. He just does not talk. The grandparents are much worried.

ALVAH STONE, M.D., Roanoke, Va.

ANSWER.—There are a number of factors which cause delay in development of speech. It is well known that a child who is congenitally deaf does not develop normally. In children in whom the function of hearing is diminished, the acquirement of speech is also delayed. It may be assumed that in some

children there is delayed development of the speech center and association tracts. There are also unexplained instances in which children learn to walk late and to talk the third or fourth year. Ultimately, however, some of them prove to have high degrees of intelligence. Not infrequently, boys in particular learn to talk as late as the third year, and sometimes the period of complete speech development lasts much longer. The explanation of these cases is probably to be sought in a temporary inhibition of normal speech development. In general, excluding the exceptions already noted, the onset of speech parallels the development of intelligence.

So far as remedial treatment is concerned, if the child has normal hearing and intelligence, the ability to speak will develop spontaneously and naturally. Attempts to force the child at an early age might cause mental overstimulation and nervousness. If the child has a defect in hearing or intelligence, special methods of training should be begun later in childhood, when the nature of the defect is established.

RECURRENT ECZEMA

To the Editor:—Will you please advise me as to treatment of a skin condition in a man, aged 55, who has a generalized itching, which is worse at night. The condition has been present for about eight months and so far has failed to respond to every type of treatment used. Physical examination revealed a normal state of nutrition, and one or two carious teeth, perhaps infected. The skin was reddened and the rash was of a fine papular nature and seemed to be just beneath the epidermis. The rash was more pronounced on the chest and upper extremity. The condition has been diagnosed by one skin specialist as recurrent eczema. The blood Wassermann test was negative on two examinations. Urinalysis was negative. Chemical examination of the blood revealed no abnormalities. The treatment has been varied from the use of ointments containing salicylic acid, benzoic acid, tar, ammoniated mercury, balsam of peru, sulphur precipitate, calamine lotion, camphor, menthol, phenol, and about every other antipruritic, to neoarsphenamine, iodides, metaphen and intramuscular injections of nonspecific proteins and intravenous treatment with mercury. The diet has been regulated, one type of food at a time being omitted without noticeable results. The patient's living habits have been checked. The patient has been seen and treated by many different physicians, including skin specialists, and to date his condition remains the same as when I first saw him about Aug. 1, 1931. Please omit name.

M.D., Indiana.

ANSWER.—Assuming that the case is one of recurrent eczema, it would seem that the condition has probably been intensified by some of the applications and injections employed. While stimulating applications are indicated in certain types of eczema, the condition described might be adversely affected by some of the agents used locally, particularly ammoniated mercury and precipitated sulphur, while the neoarsphenamine and mercury preparation employed intravenously might likewise have an undesirable effect.

In a case of this type every effort should be made to discover external or internal factors, as outlined in any standard textbook on dermatology, that might be responsible for the eruption. As a rule, a case of this type will do well with the use of so-called colloid baths, such as oatmeal water to which sodium bicarbonate has been added. Local applications should be bland, employing lotions or ointments or both. The intravenous injection of sodium thiosulphate, as employed in the treatment of postarsenical exfoliative dermatitis, is often of use in cases of this type.

NEURITIS AND ARTHRITIS

To the Editor:—I have a patient, a dentist, aged 27, who complains of pains resembling those of neuritis, which are centered about the shoulders posteriorly, in the neck posteriorly, and at times in the latissimus dorsi at about the level of the ninth and tenth ribs. These pains are evidently precipitated by his work, as they tend to pass off on days when he does not go to the office and are quite pronounced on his hard and long working days. The areas are quite painful at night on his bad days. A careful history and a physical examination do not suggest an etiologic agent to my satisfaction. The erythrocytes number 4,660,000; leukocytes, 7,000; the hemoglobin is 90; the urine is normal; the Wassermann reaction is negative; a prostatic smear is negative, although about two years ago he had a urethritis with purulent discharge, which was pronounced gonorrheal by a competent urologist. Is there such a diagnosis or etiology as "occupational neuritis"? As he gets no exercise, I have advised a generous amount of exercise. I should be grateful for any discussion you may make.

M.D., Alabama.

ANSWER.—The diagnosis concerns brachial neuritis, cervical arthritis, fibrositis and myositis The etiologic factors are postural, infectious, traumatic, exposure and metabolic. Treatment includes removal of any foci of infection, especially in the teeth, tonsils, gastro-intestinal and genito-urinary tracts; rest; avoidance of long continued strain, and physical therapy, including gentle massage, radiant heat and diathermy, any of these to be discontinued if they cause pain. A support such as a cotton collar should be beneficial. Patients with this condition should avoid drafts and cold air and should keep the tissues warm day and night. Pure brachial neuritis is rare. Symptomatic neuritis is due to arthritis of the cervical spine. There is a type of brachial neuritis peculiar to drivers of automobiles, in whom the attack usually affects the side next to the open window. Some authorities state that diathermy and infrared rays are unsuccessful and that massage may be harmful. Exposure to small doses of the roentgen ray for ten minutes twice a week for a month have been advised. Radiant therapy has also been recommended.

MULTIPLE THROMBI IN VESSELS OF LEGS

To the Editor:—A man, aged 60, with moderate generalized arteriosclerosis, auricular fibrillation of at least three years' duration, repeated blood pressure readings averaging 170 systolic and 90 diastolic, the urine showing one plus albumin and a moderate amount of casts, has had three attacks each of "cardiac indigestion," and thrombus formation in the lower limbs, twice on the left and once on the right, during the past five years. The last occlusion, which occurred twelve weeks ago, was the worst, and exhibited typical signs of femoral artery plugging, with absent popliteal pulsation, severe pain, coldness, cyanotic pallor of the leg and foot, and sensory and motor diminution. Since then a gradual improvement has ensued, with residuals at this time consisting of cyanosis rubor on dependence, pain requiring a narcotic about twice daily, diminution of sensory apperception in the foot up to the ankle, and complete foot drop (paralysis of the anterior tibial muscle group). Treatment has embraced keeping the foot at right angles to the leg, massage, continuous heat and galvanic stimulation. I have been informed that a chemical periarterial sympathectomy would benefit this condition. The only reference available is the abstract in THE JOURNAL, Oct. 3, 1931, pages 1039-1040. Reception of the details of this procedure would be appreciated, especially the method and duration of application of the solutions, whether or not a neutralizing solution is required, and the contraindications. Any comment as to this treatment, or any other treatment for this possible Buerger's disease, will be appreciated. Please omit name.

M.D., Michigan.

ANSWER.—It is not altogether certain from the history just what has really taken place. The possibility that the arterial occlusion in each case was due to an embolus must be considered.

Such an embolus might arise from a mildly active endocarditis, but five years is a long history for such a condition. However, emboli can originate in a heart the seat of a very mild infection, or where no active infection can be proved. Other sources are possible, as the loosening of small vegetations originating on plaques of the aorta.

A thrombosis of the arteries on each of the occasions is also a possibility. For some reason not known, such thromboses have been becoming more frequent during the past few years. They are frequently associated with some mild infection or occur during convalescence, but they may occur suddenly without any proved cause.

The case should be thoroughly reviewed with these two possibilities in mind, and especially with the view of ruling out an active infection of the heart.

Buerger's disease would seem to be much less likely. If it is present, any so-called chemical periarterial sympathectomy would not be advisable at the time. It is of unproved value and offers possibilities of danger. It is just as well to wait and watch the results of such procedures on other physician's patients. In a proved Buerger's disease, a ganglionectomy is often of value, but it would not be advisable in this case. A great deal can be done in cases of Buerger's disease by giving the patient 4 or 5 liters of Ringer's solution daily, or by intravenous injections of a hypertonic salt solution, as 150 cc. of a 5 per cent solution every second day. The purine base diuretics are of assistance in some cases. Fever therapy is of value but should not be used in this case, nor should the hypertonic salt solution. Theobromine in some form could be tried, as could the Ringer's solution, starting with 1 or 2 liters and increasing the amount if tolerated well.

TREATMENT OF SYPHILIS AND EXFOLIATIVE DERMATITIS

To the Editor:—1. An ampule containing sodium dimethylarsenate 10⅗ grains (0.7 Gm.) and mercuric oxycyanide one-twelfth grain (0.0006 Gm.) in 5 cc. of sterile water has been offered me for intravenous injection in the treatment of syphilis. Please comment on its use. 2. What is the method of hastening the clearing of exfoliative dermatitis after intravenous injection of neoarsphenamine? 3. Does mercury intravenously or cyanide 1 per cent, 1 cc., produce exfoliative dermatitis, or does bismuth? Please omit name.

M.D., California.

ANSWER.—1. Various combinations of sodium and arsenic are used in the treatment of syphilis. When arsphenamine is neutralized with sodium hydroxide, the disodium salt of arsphenamine (dihydrochloride of 3 diamine-4 dihydroxyarsenobenzene) is formed. Sodium cacodylate (sodium dimethylarsenate) was at one time advocated for the treatment of early

syphilis but has been found inefficient and its use has been abandoned. The mixture of sodium dimethylarsenate with mercuric oxycyanide is another instance of a polypharmaceutic combination that offers no advantage in the treatment of syphilis. It is far better to use the standard method of administering arsphenamine or neoarsphenamine intravenously and mercury or bismuth compounds intramuscularly.

2. Exfoliative dermatitis after intravenous injection of neoarsphenamine will involute more rapidly when sodium thiosulphate in doses up to 1 Gm. is given intravenously.

3. Mercury compounds have in rare instances produced an exfoliative dermatitis. Pinard and Marassi (*Bull. et mém. Soc. méd. d. hôp. de Paris* **46**:1434 [Nov. 3] 1922) have reported an exfoliative dermatitis after intramuscular injections of bismuth compounds.

POSTINFLUENZAL PLEURAL EFFUSION

To the Editor:—A girl, aged 6 years, had influenza five weeks ago, followed by a right sided pleural exudation proved by roentgen examination, which I opened by intercostal paracentesis, with closed drainage under fluid. I emptied about 2 quarts at the time of the operation, which was done under local anesthesia, and there has been constant drainage since. Her temperature remained normal for about ten days and with decrease of drainage I tried to leave the tube out, but temperature ran up to 103 F., so I replaced the tube with abundant gauze to catch the discharge, which is yellowish green, sour-smelling pus. The temperature receded to normal again with occasional evening exacerbations to 99.4, returning to normal by morning. I changed the tube two days ago, yet the temperature comes up to 102 in the afternoon and down to near normal, 99.4, in the morning. Her appetite is only fair. The bowels are kept open with agarol. I tempt her with a nourishing diet. I administer syrup of ferrous iodide 5 drops three times a day, and also a tonic of iron, quinine and strychnine, which I give to increase the appetite; I also give her viosterol and plenty of fresh air. Within the last day or so there has developed a slight cough, not irritating or annoying, without expectoration. Could the tube cause this? She seems happy and comfortable and does not complain of any especial pain or soreness. I felt that the drainage tube should remain as long as a discharge persists and that the general tonics, food and fresh air as now outlined should be continued, but felt that perhaps something else could be suggested. Do you advise irrigating with surgical solution of chlorinated soda, as has been suggested by some? After three weeks, should the tube be removed and nature allowed to take care of the secretion? Would a mixed bacterin or serum be indicated or beneficial? The family is poor and had to remove the baby home after five days' hospitalization. Any suggestions will be gratefully received. Please omit name.

M.D., Oklahoma.

ANSWER.—A postinfluenzal pleural effusion in a child is usually pyogenic in origin, but a tuberculous pleuritis should be excluded if possible if the condition does not respond typically to adequate drainage. A Pirquet test is of value in case of a child. Demonstration of tubercle bacilli in the exudate is proof of a tuberculous infection, but failure to find them does not exclude this condition.

Adequate drainage is the first prerequisite to healing of an ordinary empyema and also of a tuberculous empyema secondarily infected with pyogenic organisms. Irrigation, preferably with surgical solution of chlorinated soda by the closed method or through a small open wound, is preferable to wide open drainage as long as the empyema cavity is of any size. It can be measured by filling it with saline solution and its extent can be visualized by means of a roentgenogram made with a 15 per cent sodium bromide contrast medium. Drainage should be such as to keep the cavity completely empty of pus all the time until it is obliterated.

General supportive measures as outlined are helpful, but complete continuous drainage is essential to a cure.

LOCAL ANESTHETIC FOR TYMPANIC PUNCTURE

To the Editor:—What is the most satisfactory local anesthetic to be used for tympanic puncture? Please omit name.

M.D., New Jersey.

ANSWER.—For some years, many otologists have used equal parts of cocaine, phenol and menthol instilled in the ear with a medicine dropper and allowed to flow against the tympanic membrane in order to give a local anesthesia. Others have used equal parts of phenol, menthol and oil of eucalyptus. It is doubtful whether the cocaine has much effect, because it does not seem to anesthetize through unbroken epithelium. The phenol and menthol, however, in concentrated solution, do have a benumbing effect on the epidermis. So far as we are aware, no local application gives a perfect anesthesia. Many years ago, Professor Neumann of Vienna suggested infiltrating the sensory nerves of the drum membrane with an injection of dilute procaine solution in the roof of the auditory canal in its inner third. The entrance of the needle is so painful that it probably is not preferable to a direct myringotomy without local anesthesia. A perfectly satisfactory local anesthesia for tympanic puncture is still to be sought. Whenever possible, the administration of general anesthesia is satisfactory and of short duration, especially if nitrous oxide or ethylene is employed.

USE OF CATHETERS IN CYSTITIS WITH PROSTATIC INFLAMMATION

To the Editor:—A man, aged 67, with a history of old gonococcal infection in youth, began with polyuria, and nycturia with strangury, three or four years ago. Cystoscopic examination revealed an atrophy of the prostate, and a retention catheter instead of suprapubic cystostomy was used for drainage on account of the surgical risk involved. Violent reactions occurred four or five days after, possibly urethral fever or renal crisis, and the patient was sent home a week later, having drained about two weeks. Catheterization (retention) was further instituted at home. This was stopped a day later on account of a purulent discharge due to a catheteral irritation. This catheter given the patient by the hospital was incidentally too hard and over a No. 16 French and probably was not changed for one week. At the present time the patient has strangury with concomitant loss of anal sphincteric control, and I am thinking seriously of resuming urethral catheterization either by the retention method or three times daily. Kindly state your opinion as to either method of catheterization in a subject with a guarded surgical risk. Does catheter irrigation through the urethra result in improvement of prostatic edema in hypertrophy as is shown by suprapubic drainage instituted at Mayo's? Does it give any benefit other than drainage by enlarging the lumen of the prostatic urethra in atrophy? If the patient's condition should improve, would a suprapubic cystotomy and fistula formation be advisable for drainage and lavage?

N. S. GIARDINA, M.D., Lorain, Ohio.

ANSWER.—The symptoms of polyuria, nycturia and strangury in a patient with obstruction of the bladder neck due to atrophy of the prostate would indicate that the urethral irritation caused by the indwelling catheter had extended to the bladder and produced a generalized cystitis in addition to the prostatic edema. The regular catheterization of the bladder and its irrigation once or twice a day with a warm solution of boric acid should prove more efficacious than the placing of a permanent catheter, the use of which had evidently instituted the previous irritation and would therefore probably not be well tolerated. A permanent catheter does not enlarge the urethral lumen but by its presence tends to produce edema, congestion and secondary infection.

Should the symptoms not improve after a course of regular bladder lavage, suprapubic cystostomy should be made. This need not prove a permanent fistula, for after the edema of the prostate has subsided the obstructing portion of the atrophic gland which originally initiated the train of symptoms from which the patient now suffers and is probably not of great size could be removed through the urethra either by the so-called punch operation or by one of the newer technics now commonly referred to as transurethral prostatic resection.

APOMORPHINE IN ECLAMPSIA

To the Editor:—A nonipara, five months pregnant, complained to her family, March 15, that she could not see and that her head ached badly. At midnight she had a convulsion and on examination showed a blood pressure of 225 systolic and 115 diastolic. Urine by catheter boiled solid, and the cervix was tightly closed. The patient was in a violent state at all times, making it necessary to give ether to examine her in any way and requiring two men to hold the arm still while a hypodermic injection was given. All the usual treatment was given her with the exception of evacuating the uterus, as dilating of the cervix was considered too big a procedure at that time. Morphine, barbital, magnesium sulphate by tube in the stomach, bleeding and other measures seemed of no avail and she had fourteen severe convulsions in eight hours. By this time she was in poor condition, the pulse was fast and thready, and it was evident to every one that a fatal termination was in prospect. A short time before, an article appeared in THE JOURNAL on strychnine poisoning treated by apomorphine with wonderful results. Owing to the great clinical similarity between strychnine poisoning and eclampsia, it was decided as a last resort to try the same thing in this case. She was therefore given one-fifth grain (13 mg.) of apomorphine by hypodermic injection. There seemed to be no evidence of nausea and within thirty minutes she was perfectly quiet. Two hours later she was given another tenth grain. After this there was some slight evidence of nausea but no vomiting. At this she broke out in a copious perspiration and seemed to be sleeping naturally and within the next two hours wet herself and the bed with urine. No further treatment was given, except hot packs, and the next morning she was conscious and gave her consent to the passage of a catheter to bring on labor. Her blood pressure was 190 systolic and 125 diastolic at this time, the urine boiling solid. She delivered a macerated five months' fetus the third day, and recovery has been uneventful. Did the apomorphine change the picture as it does in strychnine poisoning? Please omit name.

M.D., Utah.

ANSWER.—The case report on the use of apomorphine against eclamptic convulsions appears quite interesting. The prompt quieting of the patient within thirty minutes after the administration of the first dose of the apomorphine indicates that this was more than a coincidence. It harmonizes with the

sedative action of apomorphine in other convulsive conditions, ranging from hysteria and alcoholic delirium to heat cramps and strychnine poisoning. Several cases of the latter were reported in the paper of Haggard and Greenberg (THE JOURNAL, April 2, p. 1133), to which the correspondent evidently refers. The mechanism of this antispasmodic action is not understood and its efficacy against strychnine is rather limited; but it may well deserve further trial. The dosage should not exceed that mentioned by the correspondent, one-fifth grain (13 mg.), for the first injection, followed, if necessary, by one-tenth grain (6.5 mg.) in one or two hours.

OPACITY OF CORNEA

To the Editor:—Please give me advice on the following case: A man, aged 38, had an operation on the right eye for certain congenital weakness of the eyesight about fourteen years ago, in which the lens is said to have been removed. Although the sight of that eye was much improved by the operation, he occasionally suffered from "corneitis," and about four years later he resorted by himself to an unwarranted application of an electric (galvanic?) current and suffered from violent headache throughout the night and completely and permanently lost the sight of that eye in the morning. His case was then diagnosed as acute glaucoma. Two years later he contracted an infection and the opacity of the diseased eye became markedly increased. At present there is dense opacity limited within the cornea, through which small portions of clear pupil and iris can be seen. The patient is neurasthenic because of the bad looking eye. The left eye is quite normal and has had no trouble. Will you kindly discuss the general way of treating the cornea opacity for cosmetic purposes? Is there any simple method of camouflaging the leukoma as by painting, other than by removal of the scar tissue or tattooing? Please omit name.

M.D., New York.

ANSWER.—It is to be regretted, but the patient does not stand much chance of improvement in the appearance of the offending cornea except by some radical procedure. An endeavor to excise the scar surgically would probably make matters worse. Tattooing offers somewhat better chances of cosmetic improvement. If the eye is hopelessly blind, one may advise exenteration with fat implantation into the scleral cavity and subsequent use of a shell eye.

CALCIUM THERAPY

To the Editor:—I am rather at sea regarding certain aspects of calcium therapy. Will you kindly answer the following questions: 1. Does it matter which salt of calcium one uses in attempting to raise the blood-clotting time? 2. Is there any advantage in giving calcium intravenously or intramuscularly, rather than by mouth, except when there is a gastro-intestinal disturbance? Are there conditions in which one can with any certainty say that calcium given as food or by oral medication is not absorbed? 3. Is there any advantage in giving calcium salts for nutritional purposes when the patient is taking an adequate quantity of milk or other calcium-containing foods? 4. Is there any peculiar advantage in the use of calcium gluconate (which one sees advertised much) over the other salts, other than its adaptability for hypodermic administration? In particular, has it any exceptional value in infantile tetany? 5. Has calcium a helpful action in catarrhal infections, or toxic jaundice? Kindly omit name.

M.D., Michigan.

ANSWER.—1. No.

2. In emergencies, as well as in spasmophilic conditions, intravenous injection may be more rapidly efficient. The details of calcium absorption are not sufficiently understood to pronounce with certainty as to when, under ordinary conditions of life or disease, it will not be absorbed.

3. No.

4. No.

5. No.

HEADACHE AFTER LUMBAR PUNCTURE

To the Editor:—A man, aged 32, had a lumbar puncture early in January for a spinal Wassermann test. This, and the blood test, were found negative. The following day the patient had a severe headache at the back of the neck and the top of the head. As this headache was not relieved in any other way but by lying down, he stayed in bed a month. The headache, which was attributed to a slow leakage of the spinal fluid, improved gradually but still is present each day, sometimes becoming quite severe, the pain being identical with the pain that came on after the puncture. Previous to the lumbar puncture the patient rarely had a headache. He is inclined to be high strung but not neurotic and is in good general health. In the early stage pituitary extract was used, also dextrose solution intravenously. These had only a brief trial. The headache has continued so long that I am at a loss to know whether it can still be due to lack of pressure of the spinal fluid. I should be glad to have a method of treatment suggested. Please omit name.

M.D., Pennsylvania.

ANSWER.—The protracted headache that is described is probably not due to persistent leakage of the spinal fluid. It is probably a functional headache in a neurotic individual. The reason for the lumbar puncture was not given. It is, of course, possible that the fundamental process for which the spinal puncture was done may be at the basis of the headache.

CUTTING HAIR AND PREMATURE GRAYING

To the Editor:—In the May 14 issue of THE JOURNAL a query is made regarding the effect of cutting the hair. It is answered that it "has no effect whatever," and that hair "grows only from the papilla at its base, a separate structure." What, then, accounts for the fact that hair will grow only to a certain length, and that, when cut, it immediately resumes growth until it has again reached that particular length? Doesn't this show the presence of a link between the papilla and the shaft? Does the recent literature give any explanation for premature graying, such as occurs in otherwise perfectly normal and healthy young adults? Please omit name.

M.D., New Jersey.

ANSWER.—No one will deny "the presence of a link between the papilla and the shaft." The papilla produces the hair, is connected to it during the whole of its time of service, nourishes it and regulates its growth, but at last separates from it, the hair falling out, the papilla remaining in the skin. When cut, the hair regrows, if allowed, to its normal length, because nature insists on hair of a certain length for each individual. The stimulus reaching the papilla must be the change in tension resulting from loss of weight of the hair. Cutting all the hairs does make them grow, but only to their regular length, and does not increase their number. There has been no recent contribution on premature graying.

NO SCARLET FEVER TOXOID

To the Editor:—Will you please inform me where I can get information about a product for the active immunization against scarlet fever which has been developed along the lines of diphtheria toxoid; namely, with solution of formaldehyde as a detoxifying agent. My attention was called to this product in the magazine *Time*, issue of April 11, 1932, under the section of medicine, where the product was described as the discovery of the National Institute of Health. Can you tell me something about this institute and its standing? Please omit name.

M.D., Illinois.

ANSWER.—The addition of formaldehyde to diphtheria toxin detoxifies the preparation, with the production of a toxoid that retains antigenic or immunizing properties. But it has not been demonstrated that such partial detoxification as results from the addition of formaldehyde to scarlet fever toxin is associated with the production of a scarlet fever toxoid. The best evidence thus far available is to the contrary. Until the existence of a scarlet fever toxoid capable of producing satisfactory immunity is demonstrated, it is inadvisable that preparations claiming to be scarlet fever toxoid be placed on the market, particularly in view of the failure of the "ricinoleated" scarlet fever preparations, for which similar claims were made.

The National Institute of Health is the name now applied to the Hygienic Laboratory of the United States Public Health Service, which has been authorized to conduct research and to receive funds for this purpose.

OINTMENT FOR INFLAMMATION UNDER FORESKIN

To the Editor:—Please advise me whether or not the repeated and prolonged use of an ointment consisting of 1 per cent of yellow mercuric oxide with 2 grains of menthol to the ounce, applied underneath the foreskin in the treatment of smegma and inflammation, is harmful either locally or constitutionally. Would it cause any ill effects either locally or constitutionally in the female, as this medication is transmitted repeatedly during coitus? Please omit name.

M.D., New York.

ANSWER.—The repeated and prolonged use of yellow mercuric oxide with menthol for the treatment of smegma and inflammation underneath the foreskin is hardly desirable. If the patient has a condition that demands repeated and prolonged local treatment, a circumcision is the simple way out. If the patient does not wish to have a circumcision, dusting powders are indicated. A mixture of equal parts of bismuth subgallate and talcum powder does not produce irritation and is more efficacious.

COLD, CLAMMY, PERSPIRING HANDS

To the Editor:—Under what conditions does one find cold, clammy, perspiring hands? Numerous pupils in my conference groups ask this question. An early reply would be greatly appreciated.

LUCILE SPIRE BLACHLY, M.D., Weatherford, Okla.

ANSWER.—The most characteristic type of functional circulatory disturbance resulting in cold perspiring hands is also associated with varying degrees of color change. It is called acrocyanosis. The hands and less often the feet are a red-blue, often somewhat puffy, always cold and moist. The color change is often sharply demarcated above the wrist. There may be no other symptoms, and the individual may seem to be in good health.

This condition appears more often in women than in men, and when in males most frequently at puberty or shortly after-

ward or associated with effort syndrome. It may be one of the features of hypothyroidism, never in hyperthyroidism, in which the hands are moist, red and warm. It is a vasomotor neurosis and may occur in association with other neuroses. It has been described (Layani) as occurring in endocrine disorders other than hypothyroidism, especially ovarian dysfunction.

Lewis believes that the disorder is one of arteriolar function with angiospasm and capillary anoxemia. Layani and others consider it to be a stasis in the venous side of the capillary circulation with dilatation of the venules.

This condition, or variations of it, may follow on debilitating illness or even acute infections and occurs commonly in chronic arthritis.

Other types of functional circulatory disorders in which pallor is the principal color reaction may fall into the Raynaud disease group, of which there are also variations. These may occur in apparently healthy individuals or in association with neurosis.

ASTRINGENT RECTAL SUPPOSITORY

To the Editor:—Will you kindly supply me with a formula for a good rectal suppository to be used principally as an astringent. There is one such on the market, a proprietary product, and I do not care to use it if I am able to substitute another.

W. E. SCRIBNER, M.D., New York.

ANSWER.—The following formula would probably meet the requirements and have the advantage over the proprietary product that it is actually and definitely astringent and that its astringency can be readily modified by changing the proportion of tannic acid:

Tannic acid	1.0 Gm.
Balsam of peru	1.5 Gm.
Bismuth subnitrate	10.0 Gm.
Cacao butter	17.0 Gm.
Cerate	2.0 Gm.

Mix and divide into ten suppositories.
Label: One three times a day.

"BARBOTAGE" IN SPINAL ANESTHESIA

To the Editor:—Kindly explain just what Labat means by the word "barbotage." He says, "injection with or without barbotage." Would there be any objection in using an ephedrine-procaine ampule for injecting the skin and interspinal ligament before proceeding to the use of French neocaine, as is recommended in the spinocaine technic? Which do you think would be the simpler and safer method (spinal) to be used in a small hospital where the responsibility of the anesthetic rests pretty much on the surgeon? I mean, which would be the simpler and safer to use, neocaine or spinocaine? Please omit name and address.

M.D., North Dakota.

ANSWER.—"Barbotage" is defined in the American Illustrated Medical Dictionary as "Fillestre's method of spinal anesthesia, in which the needle is inserted into the sacrolumbar space, and after the injection the piston of the syringe is moved to and fro several times." Commonly, however, barbotage refers merely to the to and fro motion of the piston during the injection by which fluid is alternately injected and aspirated. Injection without barbotage is made when, after injection is once started, the syringe is emptied without further aspiration. There is no objection to the use of an ephedrine-procaine hydrochloride solution for infiltration before spinal anesthesia with procaine hydrochloride except in hypertensive patients. In these cases the ephedrine should be administered after injection when there is assurance that the procaine has been deposited in the spinal fluid. Procaine hydrochloride would be more satisfactory than "Spinocaine" in the circumstances mentioned.

TREATMENT OF SYPHILIS

To the Editor:—Sept. 15, 1931, a man, aged 32, first noticed a rash over the entire body and complained of sore throat. A Wassermann test taken on that date was positive. The date of exposure was about Aug. 1, 1931. No chancre was noticed but there was a swelling of the glans penis, August 11. I assume that he did have an interurethral chancre. September 18, treatment was started and he received twelve intravenous injections of neoarsphenamine, 0.6 Gm., and fifteen 1 cc. intramuscular injections of potassium bismuth tartrate, the course ending on Jan. 1, 1932. At this time a Wassermann test was taken and proved to be negative. January 28, another Wassermann test was taken, which was also negative. The second course, extending from January 28 until April 16, included twelve intravenous injections of neoarsphenamine, 0.6 Gm., and twelve 1 cc. intramuscular injections of potassium bismuth tartrate. I am planning to take another Wassermann test, May 15. Should this next test be negative what would be the treatment, if any, after that? Please omit name.

M.D., Massachusetts.

ANSWER.—The amount of treatment advised by various authorities in the treatment of early syphilis shows great diversity, although all are agreed that adequate treatment administered as early as possible is necessary for a cure. If treatment is discontinued at the end of six months in spite of a negative Wassermann reaction there is a possible danger of relapse. Two additional somewhat shorter courses of six to eight weeks' duration with one of the arsphenamines and bismuth or mercury compounds should be given. A spinal fluid examination should also be done in one of the rest periods.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Montreal, Sept. 19. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: The examination will be held in nineteen different cities in the United States and Canada, Oct. 22. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OTOLARYNGOLOGY: Montreal, Sept. 17. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: Phoenix, Oct. 3. Acting Sec., Dr. Jos. M. Greer, Professional Bldg., Phoenix.

CALIFORNIA: *Reciprocity.* Los Angeles and San Francisco, Sept. 21. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 4. Sec., Dr. William Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 8. Prerequisite to license examination. Address, State Board of Healing Arts, 1895 Yale Station, New Haven.

IDAHO: Boise, Oct. 4. Dir., Bureau of License, Mr. F. L. Cruikshank, Boise.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Block, Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at all centers where there are five or more candidates available in a Class A medical school, Sept. 14-16. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 8-9. Sec., Dr. Charles Duncan, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 State Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 13-14. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, Sept. 6. Sec., Dr. O. Costa Mandry, Hospital Mimiya, Santurce, San Juan.

WISCONSIN: *Reciprocity.* Milwaukee, Sept. 13. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., LaCrosse.

WYOMING: Cheyenne, Oct. 3. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

Delaware June Report

Dr. Harold L. Springer, secretary, Medical Council of Delaware, reports the written examination held in Wilmington, June 14-16, 1932. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eight candidates were examined, 6 of whom passed and 2 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Hahnemann Med. College and Hosp. of Philadelphia		(1931)	87.6, 90.1
Jefferson Medical College of Philadelphia		(1929)	83.3
Temple University School of Medicine		(1931)	77.5
Queen's University Faculty of Medicine		(1931)	82.2
University of Western Ontario Medical School		(1931)	81.9

	FAILED	Per Cent
Osteopaths		71, 74.2

Dr. Springer also reports 11 physicians licensed by reciprocity with other states and one physician licensed by endorsement at a meeting held in Dover, June 28, 1932. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Southern California Coll. of P. & S.		(1914)	W. Virginia
Baltimore University School of Medicine		(1899)	Maryland
Johns Hopkins University School of Medicine		(1929)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons		(1925)	Maryland
College of Physicians and Surgeons, Boston		(1930)	Iowa
University of Nebraska College of Medicine		(1928)	Mississippi
Temple University School of Medicine		(1917)	Penna.
University of Pennsylvania School of Medicine (1928) Pennsylvania		(1926)	Michigan,
University of Western Ontario Medical School		(1926)	Michigan
McGill University Faculty of Medicine		(1926)	New York

College	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine		(1929)	N. B. M. Ex.

Book Notices

The Costs of Medicines: The Manufacture and Distribution of Drugs and Medicines in the United States and the Services of Pharmacy in Medical Care. By C. Rufus Rorem, Ph.D., C.P.A., and Robert P. Fischelis, B.S., Phar.D. Publications of the Committee on the Costs of Medical Care, No. 14. Cloth. Price, $2.50. Pp. 250. Chicago: University of Chicago Press, 1932.

The American people spend approximately $715,000,000 a year for drugs and medicines. Of this amount $190,000,000 represents drugs prescribed or dispensed by physicians, $165,000,000 home remedies, and the remaining $360,000,000 represents "patent medicines." It would seem to be reasonable to believe that at least 80 per cent of the last mentioned item constitutes money that is wasted. Perhaps the use of the "patent medicines" results in serious harm because of dependence on them by those who should be receiving scientific diagnosis and treatment. The data here brought out are of great significance in estimating the manner in which money spent for medical care is being distributed. Incidentally, the investigators find that the same public is spending some $300,000,000 annually for toilet goods.

The volume on this subject issued by the Committee on the Costs of Medical Care presents an excellent analysis of the profession of pharmacy and its growth, a consideration of the way in which the pharmacy has been modified by the introduction of other lines of trade, and a consideration of the chain store in the pharmacy field and of manufactures of various types of pharmaceuticals.

A chapter on avertising and promotion of both ethical and quack products affords a remarkable insight into current methods of promotion. In the summary and conclusions to the volume it is brought out that the manufacture and sale of products with secret formulas are inconsistent with lowered costs of medical care, and that the annual bill for medicines in the United States is unnecessarily high. It is also considered an incongruity that the medical profession should follow rigorous codes of ethics in promoting their services, whereas the manufacturers and distributers of medicine utilize all types of merchandising methods for their promotion.

It is considered that federal and state laws controlling manufacture and distribution of medicines are inadequate. The authors recommend better education of the public as to the use of suitable home remedies and the abolition of secret formula drugs and medicine through compulsory disclosure on labels and compulsory operation under annual license of all manufacturers of drugs and medicines.

Elektrische Verletzungen: Klinik und Histopathologie. Von Dr. Stefan Jellinek, a. o. Professor der Elektropathologie an der Universität in Wien. Paper. Price, 42 marks. Pp. 340, with 215 illustrations. Leipzig: Johann Ambrosius Barth, 1932.

The increasing practical use of electricity has led to the development of a new branch of medicine; namely, electropathology. Jellinek's book is noteworthy as a pioneer, systematic presentation of the clinical phenomena and the pathologic anatomy of electrical injuries. The book is the product of thirty years of active clinical experience and study of electropathology in cooperation with clinicians and investigators in the Allgemeines Krankenhaus in Vienna. A brief summary of the contents will indicate the scope of the book. The first chapter deals with electrical trauma and the various factors concerned in its production under various conditions. Then the subjective sensations and the immediate objective symptoms of the victims of electrical injury are discussed. Next comes detailed description of electrical changes in the covering of the body: the mark of the current (*strommarke*), electromechanical injury, the electrical burn, mixed forms, metallization, electrochemical changes, edema, impressions, lightning figures, and the immediate electrical necrosis. This part is illustrated by fifty telling illustrations, many in colors. Now follows consideration of severe external electrical injuries, the general aspects, including bacteriology, cranial injuries and injuries of the extremities and the trunk. This part also is well illustrated. The morbid conditions produced in the internal organs and the nervous system by electricity are considered in two chapters. The gross and microscopic anatomy of electrical trauma is described in two well illustrated chapters. The final chapter is devoted to treatment. The imperative necessity of prolonged artificial respiration (Silvester's method preferred) in cases of apparent death from electrical shock is emphasized. If the efforts are not successful after twenty minutes, withdrawal of enough spinal fluid by lumbar puncture to reduce the pressure to normal is urged. The value is stressed of the benzine compress, carefully applied, as a heart stimulant and in external electrical injury. But this is not the place to discuss details of treatment. The book is a contribution of major significance to electropathology and it should be translated into English.

Essentials of Psychiatry. By George W. Henry, A.B., M.D., Assistant Professor of Psychiatry, Cornell Medical School, New York. With a chapter on Psychiatric Nursing. By Adele Poston, R.N. Second edition. Cloth. Price, $4. Pp. 304. Baltimore: Williams & Wilkins Company, 1931.

In the comparatively small bulk of this volume the author has endeavored to present not only descriptions and case reports of the psychoses and psychoneuroses and their treatment but also personality development, child guidance, mental hygiene, psychopathology of the normal, the various forms of psychoanalysis and, in addition, psychiatric nursing and social service. The natural consequence is that the presentation is summary and dogmatic and tends to make the problems appear far more simple than they really are. The material is carefully selected and formally sound and has been put together in probably as good a form as is possible in view of the enormous ground covered. The danger is that it will leave the impression with the reader that he knows all there is to know about psychiatry. The author evidently recognizes the danger of oversimplicity and in the introduction cautions the reader to make use of the references given to the literature, though it appears from looking through them that they refer in the majority to strictly psychoanalytic literature.

Undersökningar över främre hornhinneytans form. Akademisk Avhandling som med tillstånd av vitterfarna medicinska fakulteten i Uppsala för vinnande av medicinsk doktorsgrad till offentlig granskning framställes. Av. Fredrik Berg, Med. Lic. å Fysiologiska Institutionens Lärosal Lördagen den 16 Mars 1929 Kl. 10 F. M. [Investigations Concerning the Outer Surface Form of the Cornea. An Academic Dissertation Which, With the Permission of the Advanced Medical Faculty at Uppsala University, is Presented by Fredrik Berg, Medical Licentiate, at a Public Examination for the Object of Winning his M.D. at the Examination Hall of the Institute of Physiology—Saturday March 16, 1929 at 10 A. M.] Paper. Pp. 189, with 92 illustrations. Göteborg: Elander, 1929.

The purpose of this research is to establish as accurately as possible the curvature of the anterior surface of the cornea and its variations in different states of refraction and in varying sizes and shapes of the eye itself. The work is based on the examination of 130 normal eyes, two cases (four eyes) of microphthalmia, one case (two eyes) of microcornea, and five cases of megalocornea. In conducting the investigation, the principle of measuring the corneal reflexes from mires of known dimensions was followed and two methods were used: one by means of a modified Javal-Schiøtz ophthalmometer and the other by the photographic method of Gullstrand. Both methods are open to minor errors, but the nature of the errors in one case is entirely different from that in the other.

The previous conceptions of the shape of the cornea, as formulated by Gullstrand and others, are that the central area of the cornea, approximately 4 to 5 mm. in diameter, is essentially spherical; that the central spherical area is displaced somewhat temporally and downward from the visual axis; that from this area toward the periphery the curve flattens, and that the flattening of the curve is more marked nasally and above than temporally and below. The author finds these conceptions essentially correct.

The curve of the horizontal meridian, in eyes in which the central refraction and in which the dimensions of the eyes fall within normal limits, proves to be remarkably symmetrical and constant. The horizontal curve, therefore, is used mainly in this work in recording comparisons in different conditions. The vertical meridian, on the other hand, shows wide variations and irregular curves.

The author goes at some length into the phenomenon of a line which Handmann had observed during transillumination of the eyeball and first described in 1923. Handmann designates it as a fine, refractive line running in an oblique hori-

zontal direction through the upper half of the cornea. Berg investigated 100 consecutive cases of otherwise normal eyes and demonstrated Handmann's line, not only by transillumination but also by skiascopy, in twenty-one cases. Corresponding to this line, he discovered a sudden flattening of the corneal curve at about 15 to 20 degrees above the horizontal meridian. This flattening followed roughly the location of the edge of the upper lid. In all these cases there existed an increased pressure on the eyeball either from such conditions as blepharospasm, or from a thick and heavy upper lid. He concludes, therefore, that Handmann's line is the result of an abnormal pressure of the upper lid on the cornea.

In cases in which the normal proportions of the bulbus are disturbed, as in microphthalmia, microcornea, megalophthalmia and megalocornea, the corneal curves do not follow those of the normal eye. The difference manifests itself mainly in a contraction or an expansion of the central spherical area. The peripheral flattened zone is much less affected as to both shape and extent. In microphthalmia and in microcornea the central spherical area is partly or entirely absent. The peripheral flattening on one side meets that on the other side in the center of the cornea. This offers an explanation for the high degree of hyperopia that often accompanies a pure microphthalmia. In megalocornea the increase in area is taken up nearly altogether by an enlargement of the central spherical area.

The work bears evidence of extensive and careful study of the field, including the numerous mathematical considerations that enter into the subject. The only criticism that could be brought against it would be that the conclusions are based on the study of a rather small number of cases.

The Cost of Equipping a Dental Office: A Study of the Initial Expenditures of Dental Graduates When Equipping an Office for Practice. By Dorothy Fahs Beck, of the Research Staff of the Committee on the Study of Dental Practice of the American Dental Association. Publications of the Committee on the Study of Dental Practice of the American Dental Association, No. 2. Paper. Pp. 41. Chicago: University of Chicago Press, 1932.

The data on which this study is based consist of information from two independent sources; namely, replies of dental graduates of 1930 to a schedule sent them by mail, and information furnished by dental supply houses regarding the purchases in 1929 of recent dental graduates. Schedules sufficiently completed for use in the study were received from 512 graduates of 1930. The information received from nine dental supply houses furnished data on 236 purchases.

The mean initial expenditure for operating room and laboratory equipment of 480 dental graduates of 1930 was $2,340. The mean intial expenditure for the same item of forty-one dentists who specified second-hand equipment was $1,515, or somewhat more than $800 below that for the total group. A comparison of these figures with the data from the dental supply houses shows that the mean initial expenditures of 236 purchases reported by individual dental supply houses for 1929 was $2,109, or about $230 less than the amount reported directly from 480 dentists. Table 3 is interesting because of the percentage of analysis of the various articles of equipment purchased by 500 dental graduates of 1930 (these articles were purchased prior to 1931). Of the 500 dentists, 100 per cent purchased a dental chair; 99 per cent, a cabinet; 97 per cent, a sterilizer; 95 per cent, a dental unit; 90 per cent, a dental light; 88 per cent, an electric engine; 69 per cent, casting equipment; 65 per cent, an electric lathe; 52 per cent, a laboratory bench; 49 per cent, an air compressor; 46 per cent, x-ray equipment; 8 per cent, a gas machine; 4 per cent, a safe. This analysis does not necessarily include all articles of purchase but is merely an analysis of those items asked for on the schedule used in the study.

It appears from this study that the mean initial expenditures for dental supplies of 486 dental graduates of 1930 was $187, and the mean initial expenditures for reception room furnishings of 496 dentists of the same year of graduates, $139. In some instances it was found necessary for dentists to expend a certain amount for additional plumbing and wiring of their offices. The mean initial expenditure for this item is given at $162.

The average of these total expenditures is $2,867. This includes an average for miscellaneous items of $66. In percentages, this may be summarized as follows: dental equipment, 80.7 per cent; supplies, 6.5 per cent; plumbing and wiring, 5.7 per cent; reception room furnishings, 4.8 per cent; miscellaneous, 2.3 per cent.

It appears that those dentists who were beginning to practice in towns of medium size spent on the average more for their office equipment than those locating in small towns or large cities.

Although this analysis does not purport to include all factors that are involved in the equipment for dental practice, the data presented should provide a helpful guide to those who are about to enter the practice of dentistry.

La syringobulbie: Contribution à la physiopathologie du tronc cérébral. Par N. Jonesco-Sisesti. Préface du Professeur Georges Guillain. Paper. Price, 70 francs. Pp. 391, with 28 illustrations. Paris: Masson & Cie, 1932.

Cavities occurring in the spinal cord and known as syringomyelia may arise also in the medulla, when they are termed syringobulbia. They may form in the medulla secondarily, by extending from the spinal cord, or may originate there primarily. As they are located in a comparatively small area, where the majority of the cranial nerves essential to life originate, the clinical pictures of syringobulbia of necessity vary greatly. On the other hand, the cavities may cause only a small destruction of the medulla, of one nucleus or of one of the numerous pathways connecting the medulla with the neighboring organs. Such lesions cannot be produced experimentally, and to have an opportunity to study the changes produced by such natural experiments is a great privilege. Jonesco-Sisesti followed up eleven personal cases of syringobulbia, four of them pathologically in serial sections all with the method of Weigert-Pal counterstained with carmine; in one case an Alzheimer method was used also. In addition, he gathered a hundred cases from the literature. Probably a more thorough study with histopathologic methods of the four cases of cavities in the medulla would have led the author to the conclusion that syringomyelia or syringobulbia is not identical with a gliomatous growth, and that neither is an infectious disease. Probably it would have shown also why there is sometimes lack of correspondence between the extent of the anatomic changes and the clinical picture, which may be insignificant in the presence of vast anatomic changes. Otherwise, the difficult and seemingly dry subject is covered admirably, in an entertaining and lucid manner. The clinical and anatomophysiologic facts are carefully studied, analyzed and correlated. It is an exceptionally able review of the modern status of the anatomy and physiology of the cranial nerves, their nuclei and tracts. It is the best and most comprehensive treatise on the subject since the famous monograph of Schlesinger of thirty years ago. In an extensive treatise like this, with a bibliography of 460 references, mistakes are unavoidable. Onuf and Collins, for instance, well known American neurologists, are referred to as British, Dejerine is spelled Déjerine, and Argyll Robertson is spelled Argyll-Robertson.

The Anthropometry of the American Negro. By Melville J. Herskovits. Cloth. Price, $4. Pp. 283, with 34 illustrations. New York: Columbia University Press, 1930.

The American Negro today is not the American Negro of Revolutionary or Civil War days. In this volume the author, as the result of four years of research, presents a picture of what has developed from the American Negro through long continued mixture with the white population and the aboriginal American Indian types. Twenty-nine per cent of the Negroes examined claimed to have partial Indian ancestry, and the anthropometric studies seemed to confirm the validity of this claim. The type toward which the American Negro in this country seems to be evolving is a relatively homogeneous one. The current customs among the American Negro populations bearing on the invidious nature of light color seem to make for a strong tendency toward marriage between dark men and light women and thus to set up a social mechanism, which, if continued, will intensify Negroid features for this type in the future. The studies of Herskovits incline him to the belief that the amount of racial mixture represented in the American Negro population as a whole shows that the census estimate of 85 per cent pure Negro is not correct.

Die Nervenkrankheiten des Kindesalters. Von Professor Dr. Georg Peritz. Second edition. Paper. Price, 39.50 marks. Pp. 688, with 178 illustrations. Leipzig: Fischers medizinische Buchhandlung, 1932.

This book, the first edition of which appeared twenty years ago, has been completely rewritten. In the lapse of years, knowledge of the nervous diseases of children has increased and several diseases have been described and studied which were unknown when the previous edition was published. The author attempts to justify the teachings of Freud, but he does not think that the freudian treatment is applicable to nervous children. The subject matter is divided into two parts, the general and the special. In the first division he considers in detail the nervous structures of childhood, general symptomatology, the autonomic nervous system, speech disturbances, examination of the spinal fluid, roentgen examination of the skull, ventriculography, and the microscopic study of the skin capillaries. A tabular form is given for psychologic examination, with minute details for determination of the mental status. In the special portion of the book he discusses the usual organic nervous diseases, as well as the diseases of the endocrine system. Chapters on the neuroses and the psychopathic diseases of childhood are included. The author notes that, in infantile cerebral palsy, birth trauma should be considered only one of the factors in the etiology and that the hemiplegic forms are more often the result of infection, while birth trauma contributes a considerable part in the production of the diplegic forms. Nevertheless, syphilis, postpartum trauma and brain malformation associated with malformation in other organs are contributing factors, in some cases at least. The chapter on encephalitis is well presented, and the postvaccinal variety is considered in some detail. Peritz believes that this condition is caused by an extraneous virus in the vaccine. Syphilitic disorders of the nervous system receive important and detailed consideration, together with minute directions for treatment. In discussing epilepsy the author considers the various theories concerning the etiology and pathology and comes to the conclusion that the disorder is not due to physiochemical, anatomic or physiologic causes but to a vascular circulatory disturbance. In other words, he believes that an angiospastic spasmophilic constitution is the basis for epilepsy. This is a splendid compendium of our knowledge on the nervous and mental disorders of infants and children and it will be eagerly consulted by those who seek authoritative information.

The Healing Cults. A Study of Sectarian Medical Practice: Its Extent, Causes and Control. By Louis S. Reed, Ph.D. Publications of the Committee on the Costs of Medical Care, No. 16. Cloth. Price, $2. Pp. 134. Chicago: University of Chicago Press, 1932.

Many of the studies made by the Committee on the Costs of Medical Care may have seemed to physicians to be somewhat remote from any immediately practical service to the public. Such questions cannot, however, arise in relationship to the present volume. Here, unquestionably, is the most accurately assembled data thus far made available on sectarian practice. Dr. Reed points out that there are some 36,000 cult healers in the United States, including osteopaths, chiropractors, naturopaths, manipulative and physical therapeutic healers of all types, and the numerous offshoots of Christian science and faith healing. For the worse than useless services of this remarkable group, the American people pay each year $125,000,000. When it is considered that this sum represents more money than is spent altogether for preventive medicine, a realization of what such waste means to the public begins to develop. The book is crammed with facts. Reed considers the distribution and economic importance, the history, the legal regulation and the medical relations of each one of the cults discussed. He lists the available schools and provides data as to numbers of men in practice and the amounts that they earn. The concluding chapter deals with the causes and control of medical sectarianism. It is found that the cultists flock to large population centers more than do physicians, that practically all of them except Christian science are peculiar to America, that none of the cults have any permanence, and that they have no proper or logical place in medical care. The psychology of cultist practice seems to be quite thoroughly understood by Dr. Reed. The basis of their existence is the failure of the public to understand scientific medicine; the relationships of physicians; their significance in the social, economic and scientific plan of things; and the long and arduous preparation actually necessary for medical practice. Dr. Reed considers what the law may do to control sectarian practice and comes eventually to emphasis on basic science laws and a minimum standard of education for all who propose to heal the sick.

Handbook of Medicine for Final Year Students. By G. F. Walker, M.D., M.R.C.P., Consulting Physician to the Sunderland Municipal Hospital, Leeds. Cloth. Price, 10s. 6d. Pp. 255. London: John Bale, Sons & Danielsson, Ltd., 1931.

A careful perusal of this little volume, subsequent to an unfavorable prejudice gained by reading the introductory note, completely substantiates the author's claims. Following is an abstract of the introductory note:

The author of this book ventures to claim for it a high degree of utility and originality. It is intended to serve several classes of students of medicine: First, the serious student in his clinical years taking the ordinary course for degree or license who wishes to know the topics and problems on which he should concentrate. Second, the student who has perhaps been disheartened by the difficulties and complexities of medical study and who wishes in a few months or weeks prior to his "final" to turn to something fresh and practical which has been almost specifically written for him. Third, the newly qualified practitioner about to embark on hospital or assistantship duties and who wants some pithy and everyday medicine in small compass. Fourth, the practitioner who has been devoted to some narrow specialty and who requires to keep alert and polished in general medicine. Finally, the man who has been parted from formal academic medicine for a little time and who wishes to revise his knowledge therein prior to taking a higher diploma or degree.

The book has been written with all these requirements in view. Concentration on essentials has been throughout the aim. The book should be used to supplement study in the wards and outpatient departments and it should be used to round off and consolidate the work of lecture room, study and bedside. No attempt has been made to go beyond the scope of a practitioner armed with seeing eyes, sharp ears, deft fingers, open mind and clinical perspective.

The book is therefore recommended for purchase by the medical student and practitioner.

Microscopic Slide Precipitation Tests for the Diagnosis and Exclusion of Syphilis. By B. S. Kline, A.B., M.D., Chief of Laboratories, Mount Sinai Hospital of Cleveland. Cloth. Price, $2.50. Pp. 99, with 28 illustrations. Baltimore: Williams & Wilkins Company, 1932.

In 1926, Kline and Young published a precipitation test for syphilis in which Kahn antigen suspension was mixed with serum on a slide and the results were read by means of the microscope. Since that time, Kline has developed several antigens especially suitable for slide work and has evolved "diagnostic" and "exclusion" tests with heated serum, unheated serum, defibrinated blood and spinal fluid. The diagnostic tests Kline interprets as conservative in sensitiveness but highly specific; the exclusion tests as highly sensitive but not quite specific. In the present manual, the author summarizes and amplifies his published studies. The manual is especially well printed and should be of interest to serologists.

Klinische Elektrokardiographie mit einem Grundriss der Arhythmien. Von Dr. Wilhelm Dressler, Assistent der „Herzstation" in Wien. Mit einem Geleitwort von Prof. Dr. C. J. Rothberger. Second edition. Paper. Price, 12 marks. Pp. 148, with 118 illustrations. Vienna: Urban & Schwarzenberg, 1932.

The aim of the author has been to present the subject of electrocardiography in brief form and from the clinical point of view, so that it might meet the needs of the practitioner. This purpose he has successfully accomplished, largely by the omission, or only casual consideration, of theoretical and debatable questions. There is a brief discussion of the principles underlying electrocardiography, the methods employed in taking tracings, the normal electrocardiogram, and alterations due to change of position or increase in size of the heart. Then follow chapters dealing with variations due to unusual origin or conduction of impulses. There is a final chapter on the electrocardiogram in diseases of the heart and vessels. In an appendix there is presented a table that may serve as a guide to one attempting to analyze and interpret cardiac tracings. The book is well written and well printed. The fact that this edition follows the first in about a year speaks for the warm reception of the volume by German-speaking physicians. While it will not displace the excellent works of similar scope that have been written by English, French and American authors, it is a fit companion of these and deserves favorable comment.

Medicolegal

Liability of Interns and Nurses for Negligence

(Nickley v. Skemp (Wis.), 239 N. W. 426)

Marvin Nickley bled to death in a hospital, following a tonsillectomy. His administrators sued the physician who performed the operation, three interns, who were graduates of medical colleges but not licensed to practice medicine, and two undergraduate nurses, the interns and nurses having been assigned by the hospital to the care of the patient. The complaint alleged that the defendant physician who operated performed the operation carelessly and negligently and that all of the defendants "were careless and negligent in the following respects in caring for said patient: In failing and omitting to examine said child at any time prior to said operation; in omitting to give said child a blood coagulation test at any time prior to said operation and treatment; in failing to properly examine said child throughout the period he was in said hospital; in refusing to call a duly licensed physician to care for said child after said operation; in failing to apply usual and customary methods of stopping bleeding; in failing to properly diagnose and determine the physical condition of said child, following said operation; in failing to inform each other of the condition of said patient as observed; in refusing to comply with the demands of the parents of said child that the condition of said child be reported to (Dr. ———, the physician who operated) and that said doctor be called; in neglecting to give said child blood transfusions or take other means to revive him; and in permitting said child to bleed to death without proper care, treatment and attention."

All of the defendants except the operating physician demurred to the complaint on the ground that it failed to state facts sufficient to constitute a cause of action against them. They claimed that the duties that they were charged with having failed to perform were duties which under the law could be performed only by practicing physicians; that the complaint did not charge them with having failed to perform duties which they could lawfully perform, and that their failure to perform duties that they had no legal right to perform could not constitute negligence on their part.

The very fact, said the Supreme Court of Wisconsin, on appeal, that the interns and nurses who demurred were in the employ of the hospital in the respective capacities named and were assigned by the hospital to the care of the patient is a sufficient allegation that they owed to the patient the performance of such duties as were ordinarily performed by those occupying similar positions in the hospital. The contention of these defendants that the complaint was deficient because it failed to allege specifically each and every duty devolving on them in the course of their care of the patient the court refused to sustain. The complaint, said the court, specifically alleges that all of the defendants were negligent in certain stated particulars, and this plainly is tantamount to alleging that the faithful performance of their duties required them to do those things which it is alleged they negligently omitted and failed to do. Whether such duties actually did devolve on them or not will be a matter of proof, as will also the determination whether such duties devolved on the interns or on the nurses.

It cannot be said that the performance of the duties with which it was alleged the defendants were charged were duties that it would have been unlawful for them to perform. The law recognizes that a hospital internship of at least twelve months is required before a license to practice medicine may be granted. Although under the law no person may practice medicine, or hold himself out as authorized to practice medicine, without first securing the required license or certificate, yet the law itself requires an internship as a part of one's medical education before one can be licensed to practice. This is a legal sanction of the performance of such duties on the part of interns as are usually and ordinarily performed by them. The performance of such duties does not constitute the practice of medicine or a representation that the intern is authorized to practice medicine.

And so with nurses. Most of them acquire their education through hospital service. In fact, many hospitals are licensed as nurses' schools by the state board of health. The law does not prohibit any one from practicing as a nurse. It prohibits any person from practicing or attempting to practice as a registered, trained, certified or graduate nurse, without a certificate of registration. Any one who assumes to act as a nurse assumes certain duties, and the failure to perform those duties may constitute negligence.

The Supreme Court held, therefore, that the complaint stated a cause of action against all of the defendants, adding that whether they were jointly liable for their several acts of negligence, a question not presented by the demurrer, would more definitely appear from the evidence when the case was tried.

Evidence: Testimony by Physicians Concerning Complaints of Patients.—In no decision or text that we have been able to find, says the Supreme Court of Washington, has it been held that a physician called for the purpose of effecting the cure of a patient is not permitted to testify as to his patient's statements concerning past pain and suffering. A physician called for the sole purpose of qualifying himself to testify in a trial, and not for the purpose of treatment, may testify, in the state of Washington, as to those statements that were made to him by the person examined, regarding her condition, on which the physician bases his opinion. Such testimony is admissible, however, not to prove the condition of the patient at the time of the examination, but only to enable the jury to determine the weight to be given the opinion of the physician. The fact that a more restrictive rule as to the admission of such evidence in cases of this character is followed by the United States Supreme Court and by most federal courts was not regarded by the Supreme Court of Washington as a sufficient reason for changing the practice established in the state of Washington. According to the appellant in this case, in twenty-seven jurisdictions, including the United States Supreme Court and several other federal courts, the rule runs contrary to Washington practice.—*Kraettli v. North Coast Transp. Co. (Wash.), 6 P. (2d) 609.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Montreal, Sept. 19-23. Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Neb., Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, French Lick, Indiana, Sept. 12-14. Dr. Magnus A. Tate, 19 West Seventh Street, Cincinnati, Secretary.

American Congress of Physical Therapy, New York, Sept. 6-10. Dr. F. B. Balmer, 185 North Wabash Avenue, Chicago, Secretary.

American Hospital Association, Detroit, Sept. 12-16. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Physical Therapy Association, Detroit, September 28-30. Dr. C. C. Vinton, 585 West End Avenue, New York, Secretary.

American Roentgen Ray Society, Detroit, September 27-30. Dr. Eugene P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

Colorado State Medical Society, Estes Park, Sept. 8-10. Mr. Harvey T. Sethman, 227 16th Street, Denver, Executive Secretary.

Delaware, Medical Society of, Lewes, September 27-28. Dr. W. O. La Motte, 604 Medical Arts Building, Wilmington, Secretary.

Idaho State Medical Association, Pocatello, Sept. 16-17. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Indiana State Medical Association, Michigan City, September 27-29. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Kentucky State Medical Association, Louisville, October 3-6. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Kalamazoo, Sept. 13-15. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Oregon State Medical Society, Klamath Falls, Sept. 22-24. Dr. Albert W. Holman, 410 Taylor Street, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, October 3-6. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Utah State Medical Association, Ogden, Sept. 15-17. Dr. Leland R. Cowan, 305 Medical Arts Building, Salt Lake City, Secretary.

Vermont State Medical Society, Burlington, October 6-7. Dr. William G. Ricker, 31 Main Street, St. Johnsbury, Secretary.

Washington State Medical Association, Tacoma, Sept. 12-14. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 14-16. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

1: 417-444 (May) 1932

*Bacteriophage: Its Nature and Its Therapeutic Application. J. E. Walker, Opelika.—p. 417.
Vertigo. J. G. Sanders, Mobile.—p. 420.
*An Improved Technic for Perineal Repair in Presence of Rectal Pathology. C. D. Gaston, Birmingham.—p. 423.
The Doctor, His Office and the Patient. J. R. Garber, Birmingham.—p. 424.
Removal of Gallbladder. A. M. Roan, Decatur.—p. 428.
Solution of Medicolegal Problems by Blood Grouping Tests. L. W. Parr, Andalusia.—p. 429.

1: 445-496 (June) 1932

The President's Message. T. Gaines, Mobile.—p. 445.
Practical Points on Diagnosis and Treatment of So-Called Lymphoblastoma Group of Diseases. A. B. Cannon, New York.—p. 454.
Rôle of Calcium and Phosphorus in Prevention and Cure of Rickets. C. J. Bloom, New Orleans.—p. 467.
Clinical Aspects of Hay Fever and Asthma. G. H. Fonde, Mobile.—p. 471.
The Game Bird as Possible Disseminator of Tularemia. E. Tankersley and I. L. Johnston, Samson.—p. 478.

Bacteriophage.—Walker calls attention to the fact that the nature of bacteriophage is not definitely known, although its properties suggest that that it may be a filtrable virus parasitic on bacteria. Its use does not appear to influence the course of septicemia and genito-urinary infections. Its value in dysentery, cholera and plague has not been definitely ascertained. Bacteriophage is of definite benefit in the treatment of staphylococcus infections so situated that local dressings moistened with bacteriophage can be applied. Among conditions so amenable to treatment are abscesses, furuncles, osteomyelitis, impetigo, and furunculosis of the external auditory canal. In treating such infections, good results are obtained with the use of stock staphylococcus bacteriophage.

An Improved Technic for Perineorraphy.—Gaston performs perineal repair with the patient in the ventral-prone posture. In this position, the field is drained of blood and the thighs are apposed, the latter fact permitting easy apposition of the levator muscles. Regional anesthesia, either extradural or intradural sacral, gives complete relaxation and facilitates differentiation of tissue planes. Very little bleeding obscures the operative field. With the patient in this posture and the pelvis elevated 15 cm. on a pillow, by lowering the plane of the body 15 degrees or more and slightly elevating the thighs above the horizontal, one places the field of operation in a maximal surgical position in the same fashion that a laparotomy wound is exposed. Also, assistants are in a helpful relationship. The method of suture of levator muscles is the other essential improvement in technic. It is an established fact that sutured muscle in these operations tends to break down about the tenth day. The author believes this is due to strangulation by right-angled sutures. He has adopted the plan of placing number 2 doubled chromic catgut sutures through the muscles in line with the muscle fibers. In this way, strangulation will not occur and the needle is never directed toward the rectum. These sutures are interrupted and the number is governed by the degree of tissue separation. With thighs lying close together, the levators fall into apposition without tension. An uncomplicated technic is employed throughout. The mucosa and skin are closed with a running stitch of plain catgut. Redundant vaginal mucosa is not removed but tucked back above the newly made perineal floor. In the case of coexisting hemorrhoids, these are removed by a ligature procedure.

American Journal of Anatomy, Philadelphia

50: 179-349 (May 15) 1932. Partial Index

Developmental Significance of Mammalian Pharyngeal Tonsil: Cat. B. F. Kingsbury, Ithaca, N. Y.—p. 201.

American Journal Medical Sciences, Philadelphia

183: 741-888 (June) 1932

*Cardiac Manifestations of Hyperthyroidism. E. C. Andrus and D. McEachern, Baltimore.—p. 741.
*Management of the Decompensated Cardiac Invalid: I. One Hundred Case Records Analyzed from Standpoint of the Individual Patient. H. T. Hyman and N. M. Fenichel, New York.—p. 748.
Id.: II. Effects of Specific Medication. H. T. Hyman and N. M. Fenichel, New York.—p. 753.
*Experimental Chronic Hyperparathyroidism: II. Osteitis Fibrosa Produced in Rats. J. L. Johnson, Chicago.—p. 761.
Id.: III. Osteitis Fibrosa Produced in Puppies. J. L. Johnson, Chicago.—p. 769.
Id.: IV. Effects of Administration of Irradiated Ergosterol. J. L. Johnson, Chicago.—p. 776.
*Idiosyncrasy to Viosterol. M. B. Gordon and H. Lieberman, Brooklyn.—p. 784.
Serum Treatment of Nineteen Cases of Anthrax Including One of External, Internal and Bacteremic Type. P. F. Lucchesi, Philadelphia.—p. 795.
Pregnancy and Diabetes, with Report of Five Cases and Review of Literature. B. D. Bowen and N. Heilbrun, Buffalo.—p. 803.
Renal Glycosuria. A. Marble, Boston.—p. 811.
Chronic Essential Pentosuria: Report of Three Cases. A. Marble, Boston.—p. 827.
Therapeutic Effect of Hemolysis, Especially in the Anemias. C. F. Charlton, Pasadena, Calif.—p. 832.
Diaphragmatic Tic Relieved by Section of Phrenic Nerves: Report of Two Cases. H. Smith, Greenville, S. C.—p. 837.
Relation of Sympathetic Nervous System and Generalized Lymphoid Hyperplasia to Pathogenesis of Exophthalmic Goiter and Chronic Lymphatic Leukemia. H. B. Friedgood, Ann Arbor, Mich.—p. 841.
Inefficacy of Spleen Extract in Treatment of Lymphatic Leukemia. J. E. Gonce, W. S. Middleton, H. C. Bradley and M. S. Nichols, Madison, Wis.—p. 850.

Cardiac Manifestation of Hyperthyroidism.—Andrus and McEachern describe experiments which appear to show that the tachycardia of hyperthyroidism and possibly other and more serious phenomena are related to the direct metabolic action of thyroxine or its products on the myocardium. In short, it appears that the cardiac tissue shares in the metabolic upheaval characteristic of this disease. In addition there falls on the myocardium the burden of the increased circulatory demands of the entire organism, the metabolism of which is elevated. These two factors combine to bring to the fore the cardiac manifestations of hyperthyroidism; in individuals whose circulatory reserve has been diminished by age or by organic cardiac disease they may result in myocardial failure. That prolonged hyperthyroidism results in some degree of cardiac hypertrophy seems to be well established. However, hypertrophy does not indicate myocardial damage; much less is it due to the action of a specific myocardial poison. In this instance it is to be attributed to the burden of an increased circulatory minute volume. There is, indeed, little evidence that the heart is permanently damaged. How much functional impairment may be produced by a protracted siege of this disease is a question yet unsettled. The authors conclude that it is, perhaps, the most accurate attitude to look on the heart in hyperthyroidism as suffering from its own accelerated metabolism and from the load thrown on it by the metabolism of the body as a whole. From both of these burdens it can, happily, be relieved by correction of the hyperthyroidism.

Management of the Decompensated Cardiac Invalid.—Hyman and Fenichel summarize the records of 100 decompensated cardiac invalids and note the therapeutic regimen. Eight patients were restored to compensation by physiologic rest and dietotherapy. Mechanical removal of fluid from the serous cavities was practiced in fourteen of the group. Fifty-six patients were specifically benefited by digitalis and all but four in this group had auricular fibrillation. Sixty-four patients, edematous despite physiologic rest, dietotherapy and digitalization, were relieved by the administration of mersalyl with or without the simultaneous administration of urea and the acid salts. Five patients responded by diuresis to urea alone. The authors enumerate thus the four cardinal steps in the management of the decompensated cardiac invalid: (1) physiologic rest and dietotherapy, (2) mechanical evacuation of fluid from the serous cavities, (3) digitalization, and (4) the use of diuretics.

Experimental Chronic Hyperparathyroidism. — White rats, aged from 6 to 12 weeks, were injected daily by Johnson for periods of from ten to forty-three days with parathyroid extract in doses of from 10 to 20 units. A Steenbock normal rat diet was given. Uninjected litter mates as controls remained well, whereas the injected animals developed, without exception, muscular weakness, hypotonia and skeletal lesions characteristic of osteitis fibrosa osteoplastica (von Recklinghausen); namely, a lacunar resorption of bone with softening and deformity, bending and multiple fracture. The cortex and marrow of these bones were largely replaced by fibrous connective tissue containing numerous giant cells, and new bone osteoid tissue was also in evidence in numerous cases. These experiments support the conclusion that the cause of clinical osteitis fibrosa osteoplastica (von Recklinghausen) is an excess of the parathyroid hormone.

Idiosyncrasy to Viosterol.—Gordon and Lieberman administered irradiated ergosterol in the form of viosterol (100 D and 250 D) in doses of 1 to 9 drops a day to 200 infants, who were observed over a period of from six months to one year. Untoward symptoms were noted in fifteen in the following order of frequency: diarrhea, vomiting, loss of appetite, colic and stationary or loss of weight. No case was included in this group unless a definite sequence was obtained, consisting of administration of the drug, appearance of ill effects, subsidence of the latter on suspension of the drug and finally reappearance on the resumption of viosterol. From their study the authors conclude that a definite pharmacologic idiosyncrasy to minute amounts of irradiated ergosterol (viosterol 250 D) exists in some infants. According to the incidence found in their series, this is of more frequent occurrence than the literature indicates. The drug should be suspended on the appearance of any ill effects and permanently discontinued in the event of reappearance of symptoms on its resumption. The idiosyncrasy to viosterol may not be permanent. The possibility of an idiosyncrasy should in no way detract from the general use of viosterol in either the prophylactic or the therapeutic treatment of rickets.

American Journal of Ophthalmology, St. Louis

15: 493-588 (June) 1932

Amblyopia ex Anopsia in Adult Life. L. C. Peter, Philadelphia.—p. 493.
Surgery of Inner Canthus and Related Structures. V. P. Blair, J. B. Brown and W. G. Hamm, St. Louis.—p. 498.
Controlled Reading. D. W. Wells, Boston.—p. 508.
Rational Employment of Eye Drops and Eye Ointments. E. Oláh, Gyula, Hungary.—p. 510.
Refractive Asymmetry in Temporal and Nasal Halves of Visual Field. C. E. Ferree, G. Rand and C. Hardy, Baltimore.—p. 513.
Single Scleromuscular Suture in Jameson's Recession for Squint. M. Lombardo, Brooklyn.—p. 523.
Corneoscleral Dermoid in Guinea-Pig. E. Chan, Baltimore.—p. 525.
Studies in Ocular Fatigue: IV. Fatigue of Accommodation, Experimental and Clinical Observations. C. Berens and Elizabeth K. Stark, New York.—p. 527.

American Journal of Psychiatry, Baltimore

11: 1025-1228 (May) 1932

Conflict and Integration in Schizophrenic Development. E. Kahn and L. H. Cohen, New Haven, Conn.—p. 1025.
Cardiorespiratory Variations in Personality Studies. J. A. Larson and G. W. Haney, Chicago.—p. 1035.
Psychologic Changes in Normal and Abnormal Individuals Under Influence of Sodium Amytal. E. Lindemann, Iowa City.—p. 1083.
Concerning Emotion as Impulsion and Instinct as Orientation. J. C. Whitehorn, Waverley, Mass.—p. 1093.
Children's Institute of Allentown State Hospital. H. I. Klopp, Allentown, Pa.—p. 1107.
*Auditory Hallucinations in "Nonpsychotic" Children. M. Levin, Harrisburg, Pa.—p. 1119.
The Dementia Praecox Child. Winifred Richmond, Washington, D. C. —p. 1153.
Contribution to the Early Development of Ego. L. P. Clark, New York. —p. 1161.
Scope of Psychotherapy in Schizophrenia. P. Schilder, New York.—p. 1181.

Auditory Hallucinations in "Nonpsychotic" Children.—Levin presents four case histories of boys who had true auditory hallucinations. The boys were "nonpsychotic" in the sense that they showed no acute psychotic disturbances, differing in this respect from the vast majority of the cases already recorded—cases which concern children who develop unmistakably psychotic states with hallucinations, usually at puberty. In all, twenty-four episodes were reported by these boys. The episodes are recorded in detail, attention being given to setting, content, and so on. Two of the boys showed what probably are early symptoms of a schizophrenic reaction, although at the time of the study the evidence was not conclusive. The other two boys, while maladjusted, showed nothing suggestive of schizophrenia or any other psychosis. All four boys were below the average in intelligence, two of them conspicuously so. The hallucinatory episodes were studied with regard to the quality of the hallucinatory perception, the localization, the presence of accessory sensations, the content and the apparent "functions" that are involved.

American Review of Tuberculosis, New York

25: 673-776 (June) 1932

*Pregnancy in the Tuberculous. F. L. Jennings and E. S. Mariette, Oak Terrace, Minn., and J. C. Litzenberg, Minneapolis.—p. 673.
Biometric Study of Pregnancy and Tuberculosis. F. L. Jennings and E. S. Mariette, Oak Terrace, Minn.—p. 687.
*Studies on Functional Hematopoietic Test in Pulmonary Tuberculosis. T. J. Curphey and H. K. Russell, Valhalla, N. Y.—p. 695.
Chemical Composition of Active Principle of Tuberculin: XV. Precipitated Purified Tuberculin Protein Suitable for Preparation of Standard Tuberculin. Florence B. Seibert and Betty Munday, Chicago. —p. 724.
*Juvenile Tuberculosis Suspects: Evaluation of Clinical and Roentgenologic Observations in Relation to Diagnosis and Grade of Tuberculin Reaction. E. Wolff, R. S. Stone and F. Eberson, San Francisco.—p. 738.
Clinical Notes on Renal Tuberculosis in Adults. L. V. Schneider, Baltimore.—p. 746.
Technic of Using Paper Films for Roentgenograms of Chest. Margaret Witter Barnard, J. B. Amberson, Jr., and Marion Franklin Loew, New York.—p. 752.

Pregnancy in the Tuberculous.—Jennings and his associates believe that six months after labor is a sufficient time for any harmful effects of pregnancy or labor to appear, and therefore reviewed their full-term group of twenty-seven tuberculous gravidas at that time with observations as follows: One died, three became worse, seven remained unchanged, ten improved and four were discharged and are caring for their own homes. Two others were delivered less than six months before the study was made, one of whom is improving and the other has shown a slight extension. None of the women with minimal tuberculosis were harmed by pregnancy or labor. However, the authors are not recommending pregnancy for the tuberculous patient. In fact, pregnancy in a tuberculous woman is to be avoided, but when it occurs it must be dealt with, either by interruption of pregnancy or by allowing the woman to go to term. They have had gratifying results by carefully treating the tuberculosis while permitting the mother to go to term. Out of twenty-seven patients thus treated, only two have died. The authors believe that pregnancy should be terminated when complications arise which would call for this procedure in a nontuberculous woman. Emphasis is laid on the removal of the baby from the tuberculous mother immediately after birth, for the sake of both.

Hematopoietic Test in Pulmonary Tuberculosis.—A functional test based on the activity of the hematopoietic system is offered by Curphey and Russell for the study of tuberculous patients. They have found that the degree of clinical activity in tuberculosis appears to be in direct relationship to the nature of the hematopoietic response following the intracutaneous injection of either tuberculin or milk. The hematopoietic response is in no sense a specific one, so far as the inciting agent is concerned. The simplicity of the test and the accuracy of the information obtained recommend it not only as an added means for study of the disease in the hands of those specially trained but also as an aid to those who lack special facilities for the study of the tuberculous patient.

Juvenile Tuberculosis Suspects.—From the study of a group of children suspected of being tuberculous, Wolff and his associates conclude that in establishing a diagnosis of a tuberculous infection: 1. The symptoms and physical signs are not conclusive. 2. A history of definite contact is of rather limited value. 3. Some roentgenologic observations are pathognomonic. 4. The grade of the tuberculin reaction is of definite value in this group. It also appears to have a value in deciding the question of the activity of the lesion.

Archives of Otolaryngology, Chicago

15: 671-804 (May) 1932

Malformation of Auditory Apparatus in the New-Born Associated with Ectopic Thymus. E. W. Hagens, Chicago.—p. 671.
*Paranasal Sinusitis: Opaque Displacement Diagnosis. K. W. Amano, Philadelphia.—p. 681.
Suppuration of Petrous Pyramid: Report of Two Cases. H. I. Lillie and H. L. Williams, Rochester, Minn.—p. 692.
Malignant Disease of Tonsil, with Especial Reference to Lymphosarcoma. E. F. Ziegelman, San Francisco.—p. 697.
*Odontoma of Maxillary Sinus. A. O. Freedman, Montreal, Canada.—p. 710.
*Natural Orifice of Maxillary Sinus: II. Clinical Studies. M. C. Myerson, New York.—p. 716.
Relationship of Oral and Pharyngeal Abnormalities to Speech. D. C. Lyons, Jackson, Mich.—p. 734.
*External Operation on Frontal Sinus: Causes of Failure. C. M. Anderson, Rochester, Minn.—p. 739.
Toxoid in Treatment of Atrophic Rhinitis. L. B. Bernheimer, Chicago.—p. 746.
Anatomy and Physiology of the Ear: Review of Literature from October, 1930, to October, 1931. P. E. Meltzer, Boston.—p. 755.

Paranasal Sinusitis.—Amano calls attention to the fact that the roentgenographic examination of the nasal sinuses following the administration of iodized oil by the displacement method furnishes additional information as to whether the drainage from the ostia is satisfactory or whether the sinuses or cells are filled with thickened membrane or pus. Negative results after the administration of iodized oil, however, do not always exclude the possibility of disease. The practical value of the opaque displacement method in the diagnosis and treatment fluctuates according to nasal complications, such as hypertrophied turbinates, especially the middle turbinates, and polypi. The removal of these obstructions should be advised before the final roentgenographic examination by the displacement method. The results of the administration of iodized oil by the Proetz method only in his supine position are more accurate in the case of the ethmoid and sphenoid sinuses than in the case of the maxillary and frontal sinuses. For the maxillary sinuses, the iodized oil should be injected by puncture through the inferior meatus or by cannula through the natural ostium. The advanced prone or knee-chest position of the displacement method described by the author is recommended, after the Proetz method with the supine position is practiced, in order to give better results in the administration of iodized oil, especially into the frontal sinuses and the anterior ethmoid cells.

Odontoma of Maxillary Sinus.—According to Freedman, a large odontoma of the maxillary antrum is comparatively rare. The majority of odontomas are small; the larger ones usually invade the lower jaw. The diagnosis is not difficult. In a case reported by the author, however, the clinical diagnosis was somewhat obscured by the fact that there was a sinus over the exposed surface of the tumor, suggesting the possibility of malignancy. The treatment is surgical removal intra-orally. The case described was complicated by the presence of a chronic antral suppuration with formation of polypi. The large gaping wound in the maxilla, caused by the removal of the tumor, necessitated two subsequent minor plastic operations to close the fistula leading into the antrum at the outer angle of the wound.

Natural Orifice of Maxillary Sinus.—An attempt was made by Myerson to enter the normal ostium in 170 maxillary sinuses; 138, or 81 per cent, were successfully entered, and 32, or 19 per cent, could not be entered. The Pierce cannula and the author's modification of this instrument were used. It should be remembered that the ostium lies horizontally, obliquely and vertically. In this series 34 were horizontal, 6 oblique and 98 vertical. The proximity of the middle turbinate to the lateral wall does not appear to interfere with the passage of a cannula into the maxillary ostium. There may be an occasional exception; in this study there was 1 in 138 instances. The height or prominence of the uncinate and the depth of the infundibulum do not always interfere with the successful passage of the cannula. The angle (bulla-uncinate angle) formed by the posterior upward curve of the bulla and the posterior downward curve of the uncinate is the most constant guide to the location of the ostium. On the basis of his observations the author concludes that irrigation of the maxillary sinus through its ostium is a feasible procedure in a sufficiently large percentage of cases to make it worthy of a trial.

Frontal Sinus Operation.—The principal preventable causes of failure of the external operation on the frontal sinuses in a group of cases studied by Anderson were (1) incomplete operation; (2) failure to obliterate completely the sinus cavity in the Killian type of operation; (3) in the Lynch type of operation, the collapse of the soft parts and contracture of the scar closing off the nasofrontal duct; (4) failure to provide adequate room for proper drainage through the nose; (5) failure to maintain the nasofrontal duct long enough after the operation; (6) too early surgical intervention in acute infections, and (7) failure to remove completely all the ethmoid and fronto-ethmoid cells connected with the frontal sinus. The author considers that the selection of the type of operation to be employed in any given case is extremely important and should be suited to the particular problem presented. If there has been considerable destruction of the outer wall of the sinus, changing the contour of the face is not a serious consideration, and the patient must be assured of a relatively high percentage of cures; in such cases the Killian type of operation is employed. If the normal contour of the forehead must be preserved even at a greater risk of not obtaining an entirely satisfactory result, some type of operation which preserves the anterior wall of the frontal sinus should be selected. The bony walls should be preserved sufficiently to prevent collapse of the soft parts, and the nasofrontal duct should be maintained by means of a drainage tube for a long time. The two-stage operation in which the intranasal portion of the operation is done a considerable time prior to the external operation has proved of great value.

Archives of Pathology, Chicago

13: 691-856 (May) 1932

*Histogenesis of Atrophic Cirrhosis. V. H. Moon, Philadelphia.—p. 691.
Effect of Diacetone Alcohol on Liver of Rat. H. M. Keith, Rochester, Minn.—p. 707.
*Multiple Ganglioneuroma. H. Haven and A. Weil, Chicago.—p. 713.
*Hürthle Cell Tumor. A. A. Eisenberg and H. Wallerstein, New York.—p. 716.
Radiate Formation Due to Hyphomycete (Aspergillus?) as Seen in Pulmonary Granulomatosis of Capybara (Hydrochoerus Hydrochoerus); Nature of Fungus Incrustments in General. F. D. Weidman, Philadelphia.—p. 725.
*Tissue Changes Following Continuous Intravenous Injection of Epinephrine Hydrochloride into Dogs. P. C. Samson, Chicago.—p. 745.
*Avitaminosis: III. Pathologic Changes in Tissues of Albino Rat During Early Stages of Vitamin A Deficiency. H. S. Thatcher, Little Rock, Ark., and B. Sure, Fayetteville, Ark.—p. 756.
Resistance to Insulin: Response to Insulin in Rabbits During Leukocytosis Induced by Sodium Nucleinate. I. T. Zeckwer, Philadelphia.—p. 766.
Origin and Antiquity of Syphilis: Evidence from Diseased Bones: Review, with Some New Material from America. H. U. Williams, Buffalo.—p. 779.

Atrophic Cirrhosis.—Moon calls attention to the fact that atrophic cirrhosis is the result of a progressive inflammatory process, proliferative rather than exudative. This process shows variation in activity and may be seen in latent or healed stages. The most active process is seen in juvenile cases. The latent stages are seen most often in adult life. The acuteness or latency of the process frequently parallels the clinical manifestations. There is evidence, in active cirrhosis, that degeneration and destruction of liver cells precedes the replacement by connective tissue. No morphologic reason is found for placing cirrhosis with fatty changes in a separate class. Cocci may be demonstrated frequently in sections of active cirrhosis. This observation lends support to the supposition that infection is an important etiologic factor.

Multiple Ganglioneuroma.—Haven and Weil report the first case, as far as they can determine, in which ganglioneuromas of benign type were found simultaneously in the cervical and abdominal regions. One of the tumors was located in the region of the stellate ganglion, the others retroperitoneally.

Hürthle Cell Tumor.—According to Eisenberg and Wallerstein, the Hürthle cell, as an integral part of the thyroid, does not exist because it is not always present in the gland, it is identical with the parathyroid oxyphilic cells of Welsh, and it takes its embryologic origin in close relationship with the parathyroid. Hürthle cell tumor of the thyroid is a misnomer because it leads to the erroneous impression that it originates

from the tissue of the thyroid. The tumor really originates from parathyroid rests within the thyroid and is an example of parastruma; in its relationship to the thyroid, it corresponds to renal hypernephroma. The symptoms of convulsions and constriction exhibited in a case reported by the authors suggest secretion of the parathyroids.

Intravenous Injection of Epinephrine.—Samson administered epinephrine hydrochloride intravenously to dogs at constant rates over relatively long periods (up to thirteen days). The amounts injected varied from 59 to 246 mg. Consistent tissue changes were found in the liver, kidneys, hypophysis and suprarenals. The pancreas, aorta, spleen, smooth and striated muscle and lungs were found unchanged. The liver showed an intracellular fatty change. In the cases in which the liver was the least affected, small droplets of fat were deposited in the cells surrounding the central vein of the lobule. With more advanced change, the peripheral cells of the lobules contained fat droplets, and the cytoplasm of the central cells was almost entirely replaced by fat. The kidneys showed a fatty change in the cells of Henle's loop and rarely in the cells of the collecting tubules. In the anterior lobe of the hypophysis there was loss of the secretory substance of the chromophobe cells. The alpha cells showed in general a hyperacidophilic staining reaction, appeared to be increased in number and showed a conspicuous distribution in layers around many of the blood spaces. There was a decrease in the number and size of the basophilic cells. In the cortex of the suprarenals, many of the cells showed an altered staining reaction, and there was apparently a decreased endogenous secretion of epinephrine as the result of the injection of epinephrine hydrochloride. The author suggests that the action of epinephrine on certain animal tissues is in part a toxic or a degenerative one.

Avitaminosis.—Thatcher and Sure found metaplastic changes in the posterior part of the tongue, in the salivary glands, and in the respiratory and urinary tracts during early stages of vitamin A deficiency in a large proportion of albino rats that made normal growth, some of which showed incipient ophthalmia or persistence of the cornified stage of estrus as the only sign of vitamin A deficiency, and others of which showed no external signs of A avitaminosis. Bronchitis and pneumonia were also found in several animals that still made slight gains in weight before the termination of the experiment. The authors suggest that metaplasia of epithelial structures in the respiratory tract of man may be the precursor of the common cold, bronchitis and bronchopneumonia resulting from vitamin A deficiency, before any other external symptoms are detected by physical diagnosis.

Archives of Surgery, Chicago

24: 893-1081 (June) 1932

*Experimental Study of Bone Repair: Effect of Thyroparathyroidectomy and of the Administration of Parathormone. C. A. Dragstedt and J. E. Kearns, Jr., Chicago.—p. 893.
*Tennis Elbow (Epicondylitis) Caused by Radiohumeral Bursitis: Anatomic, Clinical, Roentgenologic and Pathologic Aspects, with Suggestion as to Treatment. L. Carp, New York.—p. 905.
*Diverticulosis of Appendix. F. W. Mulsow, Cedar Rapids, Iowa.—p. 923.
*Dupuytren's Contraction, with Note on Incidence of Contraction in Diabetes. J. S. Davis, Baltimore, and E. M. Finesilver, Newark, N. J.—p. 933.
Ununited Fractures. W. C. Campbell, Memphis, Tenn.—p. 990.
*Therapeutic Venous Occlusion, Its Effect on Blood Flow in Extremity in Acute Arterial Obstruction. M. L. Montgomery, Chicago.—p. 1016.
Lateral Cervical Tumors of Aberrant Thyroid Tissue. A. R. Moritz and F. Bayless, Cleveland.—p. 1028.
*Intravenous Sodium Amytal as Adjunct in Anesthesia. H. K. Ransom, Ann Arbor, Mich.—p. 1044.
Variations in Phosphatase and Inorganic Phosphorus in Serum During Fracture Repair. A. Hunsberger, Jr., and L. K. Ferguson, Philadelphia.—p. 1052.
Sacrococcygeal Chordoma. V. E. Chesky, Halstead, Kan.—p. 1061.
Forty-Seventh Report of Progress in Orthopedic Surgery. P. D. Wilson, M. N. Smith-Petersen, L. T. Brown, J. G. Kuhns, E. F. Cave and S. M. Roberts, Boston; R. K. Ghormley, Rochester, Minn.; J. E. Milgram, New York; J. A. Freiberg, Cincinnati, and G. Perkins, London, England.—p. 1068.

Experimental Study of Bone Repair.—Dragstedt and Kearns call attention to the fact that the rate of repair of a defect in the dog's femur is reasonably consistent throughout a series of animals if all are healthy and show a good appetite during the experimental period. Dogs that are sickly from distemper, diarrhea or other causes show a definite though not great impairment of the rate of bone repair. This fact should be taken into consideration in all experimental work on growth of bone or repair after injury or fracture. Thyroparathyroidectomy in the dog definitely delays the healing of a bone defect. Healing goes on to completion, however, and is less delayed and approximates the normal if the administration of calcium is such as to maintain the blood calcium level nearly normal. The presence of the parathyroid hormone itself does not seem to be necessary for the process of calcification and ossification. The effect of parathyroid extract on the repair of a bone defect is somewhat complicated. In several dogs observed by the authors the administration of parathyroid extract was followed by the very early appearance of calcium deposition in the callus as judged by roentgenograms, conveying the impression of a facilitated repair. The time of complete healing, however, was not changed. When parathyroid extract was given in reasonably large amounts throughout the experimental period, a definite impairment of healing could be seen. Such dogs, however, frequently exhibited bloody diarrhea and loss of appetite, effects that complicate the interpretation. It does not appear probable that the administration of parathyroid extract will facilitate bone repair in any case except one of parathyroid deficiency. Thyroid deficiency uncomplicated by parathyroid deficiency did not delay the healing of a bone defect.

Epicondylitis Caused by Radiohumeral Bursitis.—According to Carp, an inflammatory involvement of the conjoined tendon at the epicondyle or of a structure in close proximity to it may produce the clinical syndrome known as tennis elbow. One of these structures is the radiohumeral bursa, the anatomy of which is discussed. It is recommended that in all cases of tennis elbow a roentgenogram be made in order to try to visualize an osteitis of the epicondyle or a pathologic and distended radiohumeral bursa. The visualization of the latter condition depends on the character of the fluid contained or of the deposit in the wall. The presence of calcium salts produces a shadow. The author reports eight cases of radiohumeral bursitis in which excellent results were obtained with different types of therapy. Five patients were males and three females. Direct trauma produced the lesion in two cases, indirect trauma in three, combined direct and indirect trauma in two and a questionable trauma in one. Swelling over the bursa was present in five cases, and there were positive roentgenographic findings in five. The operative finding in one case was a calcified radiohumeral bursa. In three other cases the spontaneous absorption of calcium deposits was noted. In the remaining four cases, manipulative rupture of the bursa was the method of treatment used. Radiohumeral bursitis, especially in the presence of swelling, is frequently the cause of tennis elbow. Prompt relief may be expected from rupture of the bursa by firm digital pressure applied over the epicondyle and radiohumeral joint. When this procedure is very painful, a general anesthetic is advisable. Operative therapy is not recommended unless conservative therapy fails to relieve prolonged or recurrent pain and disability.

Diverticulosis of Appendix.—Mulsow believes that diverticula of the appendix are more frequent than the reports in the literature would indicate. He reports nine cases that he observed in the examination of 661 appendixes during the past two years. The presence of a diverticulum in an appendix is of much more importance clinically than it has been considered to be by most writers reporting such cases. It appears that diverticula are more often than is realized the cause of sudden or unexpected perforations in so-called chronic appendicitis or recurring and acute appendicitis.

Dupuytren's Contraction.—Davis and Finesilver state that the disease of the palmar aponeurosis in Dupuytren's concentration is a focal hypertrophy of the connective tissue originating in the walls of the smallest vessels and ending in contraction. While the etiology is obscure, it seems warranted to conclude that the contraction is of idiopathic origin, that it is most apt to occur in middle age and the senile period, and that it shows an hereditary influence. It occurs in all social classes and is much more commonly found in men than in women. There is no single constitutional disease with which it is exclusively associated or of which it is a manifestation. In the majority of cases it does not appear to be specifically caused by trauma

or local irritation, though this factor, as well as local or constitutional pathologic conditions, seems at times to have some exciting or contributing influence. In the authors' experience the incidence of Dupuytren's contraction in patients with diabetes mellitus is considerably higher than in the same number of persons, otherwise comparable, without diabetes. The diagnosis is frequently confused by those unfamiliar with the condition with flexion of the fingers due to contraction of the tendons and with congenital contractions. Up to the present time, surgical intervention promises the only permanent cure. This is best accomplished by as complete an excision of the fascia of the palm and its digital fasciculi as is practicable.

Therapeutic Venous Occlusion.—Montgomery describes experiments in which he demonstrated in heparinized animals under sodium barbital anesthesia that after ligation of the superficial femoral artery: 1. Ligation of the concomitant, superficial femoral vein causes no increase in the per minute volume flow of blood through the iliac artery but causes either no change or a slight decrease during the period of examination (from eight to fifteen minutes). 2. Obstruction of the proximal venous return by ligation of the iliac vein, the common iliac vein or the inferior vena cava causes a pronounced decrease in the per minute volume flow of blood, the decrease being more marked the more cephalad the ligature is placed. 3. In confirmation of the observations of Van Kend, Brooks and Martin and others, obstruction of the venous return increases the peripheral arterial and venous blood pressure and, in general, the increase is more marked the higher (more cephalad) the ligature is placed. Because of the marked decrease in the flow of blood which follows obstruction of the venous return proximal to the point of arterial occlusion, and because of the possible danger of producing a serious venous stasis thereafter, it would appear that the use of this principle in the treatment of patients requiring ligation of the main artery of an extremity should be avoided. The employment of ligation of the concomitant vein for occlusions of the injured, but otherwise healthy, popliteal artery is strongly supported by the clinical data. Its use in other locations is still a subject for debate and should await further experimental and clinical studies. The author believes that for the present, in the treatment of acute obstructions of the main arterial supply of an extremity, except the popliteal artery, in the absence of injury to the concomitant vein it seems wise to await the appearance of impending gangrene before resorting to ligation of the vein.

Intravenous Sodium Amytal as Adjunct in Anesthesia.—Ransom calls attention to the fact that sodium amytal administered intravenously is a valuable basal anesthetic for nitrous oxide-oxygen. A better quality of anesthesia and more complete muscular relaxation can be obtained than with nitrous oxide and oxygen unassisted. A considerably higher percentage of oxygen is possible than with gas alone, thus tending to decrease the objectionable cyanosis and making for a greater margin of safety. The easy, quiet induction, along with the slow and gradual awakening, is appreciated by the patient. In nervous patients, or in cases of toxic goiter, the anesthetic can easily be given in the patient's room without exciting suspicion, thus greatly facilitating the "steal" type of operation. Postoperative nausea and vomiting are not greater than with nitrous oxide and oxygen unaided. There is usually an initial fall in blood pressure amounting to 29 mm. of mercury, or 22 per cent, which might be regarded as a contraindication to its use in certain cases; e. g., shock. When used as a basal anesthetic with gas, the incidence of pulmonary complications is not increased.

Arkansas Medical Society Journal, Little Rock

28: 223-242 (May) 1932

Arthritis as Manifestation of Bacteriologic Allergy. M. F. Lautman, Hot Springs.—p. 223.
*Carcinoma of Cervix Uteri. W. R. Brooksher, Jr., Fort Smith.—p. 225.
Abscess of Tongue: Two Case Reports. P. L. Mahoney, Little Rock.—p. 227.

Carcinoma of Cervix Uteri.—Brooksher enumerates thus the contraindications to the use of radium in carcinoma of the cervix uteri: 1. General emaciation and cachexia; in such cases rapid deterioration and death may ensue. 2. A red cell count below 3,000,000 or a hemoglobin of less than 40 per cent; radium may increase the anemia to a dangerous degree. 3. Hydronephrosis or pyonephrosis; the fibrosis produced may increase the obstruction present. 4. Rectovaginal and vesicovaginal fistulas; intense local irritation with sloughing may be produced. 5. Pelvic inflammatory disease; massive necrosis is the likely consequence (this applies also to a foul sloughing condition of the growth itself). 6. Cases in which the whole pelvis is extensively infiltrated with extension from the cervical growth; the end appears to be hastened. 7. Impaired metabolism. A proper dose must cause destructive radiation to reach all cancer cells and at the same time affect the surrounding tissue as little as possible. Usually from 4,000 to 6,000 milligram hours of heavily filtered radium is applied to the cervix and broad ligament regions supplemented with cross-fire roentgen therapy to the pelvis. Saline douches are employed until ulceration is healed, and frequent follow-up examinations should be made to detect possible recurrences.

Canadian Medical Association Journal, Montreal

26: 647-764 (June) 1932

*Normal and Morbid Physiology of Thyroid Gland. E. W. H. Cruickshank, Halifax, N. S.—p. 647.
Injuries of Crucial Ligaments of Knee Joint, with New Method of Operating for Repair of Posterior Ligament. F. J. Tees, Montreal.—p. 653.
Four Cases of Osteogenesis Imperfecta in One Family. W. G. Turner and N. W. McLellan, Montreal.—p. 659.
Blastomycosis of Gingiva and Jaw. A. Crich, Toronto.—p. 662.
*Curative Effects of Cereals and Biscuits on Experimental Anemias. Pearl Summerfeldt, F. F. Tisdall and A. Brown, Toronto.—p. 666.
The Blood in Pregnancy. J. D. Adamson and F. H. Smith, St. Boniface, Manit.—p. 669.
Sympathectomy in Case of Retinitis Pigmentosa. G. Campbell, Vancouver, B. C.—p. 674.
*Blindness from Methyl Alcohol Successfully Treated by Lumbar Puncture. G. H. Mathewson and B. Alexander, Montreal.—p. 679.
Friedländer's Pneumonia: Case. E. H. Bensley, Montreal.—p. 681.
Irradiation Therapy: Its Scope and Practical Application. D. Quick, New York.—p. 685.
Fluids in Surgery. B. J. Brandson and J. A. Hillsman, Winnipeg.—p. 689.
Sequence of Events in Some Cases of Headache. N. B. Gwyn, Toronto.—p. 699.
Classification of Mental Diseases. D. E. Cameron, Brandon, Manit.—p. 702.
Small Outbreak of Anterior Poliomyelitis. M. A. Stalker, Ormstown, Que.—p. 706.

Physiology of Thyroid.—Cruickshank calls attention to how deeply the thyroid is involved in the control of endocrine function within the human organism, in the regulation of general body growth, and in the proper functioning of the higher nerve centers. The manifold questions which continue to arise with regard to its function are the outcome of its complex interrelation with almost every tissue in the body. The question as to whether the causative factor which produces increased activity of the gland, as seen in hyperthyroidism, is neurogenic or not and is distinct from that which causes the signs and symptoms of thyrotoxicosis remains for further investigation. The physiology of the endocrine glands has altered the outlook on many of the problems which have to be faced both by the scientist and the clinician. It is clear that if one is fully to understand the complex function of, and even attempt to classify, the various types of thyroid disorder with which the clinician is faced, it must be through a correlation and correct interpretation of all the experimental data available.

Cereals in Experimental Anemias.—Summerfeldt and her associates report that rats when placed on an exclusive milk diet after weaning developed a secondary anemia of the nutritional type in from five to eight weeks. In these rats the hemoglobin was reduced from 4 to 6 Gm. per hundred cubic centimeters of blood, instead of the normal value at this age of 13 to 15 Gm. This anemia could be cured when from 33 to 50 per cent of the total diet consisted of a special cereal or a special biscuit in which there was a relatively high proportion of copper and iron. Other foods tested were farina, oatmeal, zwieback, arrowroot and whole wheat biscuits. These did not cure anemia when fed in the same proportions. The authors also investigated the influence of different cereals on the weight of two groups of children. One group was given in the diet ordinary cereals, such as farina, wheatena or oatmeal, while the second group received the same quantity of the special cereal. The groups were kept on the diet for ten weeks, and at the end of this time the diets were reversed for the next ten weeks. The daily intake of cereal was 4 ounces (113 Gm.).

In the case of the special cereal this supplied 27.2 mg. of iron daily, while the ordinary cereals supplied only 1.2 mg. daily. The children on the special cereal made an average gain of 1.2 Gm. of hemoglobin per hundred cubic centimeters of blood, while those on the ordinary cereal made no gain at all.

Blindness from Methyl Alcohol Treated by Lumbar Puncture.—Mathewson and Alexander report a case of methyl alcohol poisoning in which the blindness was successfully treated by lumbar puncture. From a consideration of all the facts they advise that in this condition the following treatment be instituted as soon as possible: (1) repeated gastric lavage during the first four or five days to remove the alcohol excreted by the gastric glands; (2) a large fluid intake to dilute the poisons circulating in the blood stream; (3) pilocarpine sweats and hot packs daily to aid elimination through the skin, and (4) and most important, the withdrawal of as large an amount of cerebrospinal fluid as possible daily, for four or five days. The pressure should not be allowed to fall below 100 mm. of water, to dilute and mitigate the attack of the poisons on the central nervous system, especially the eye. This treatment, of course, is to be used whether the eyesight is damaged or not.

Journal of Bacteriology, Baltimore

23: 355-428 (May) 1932

Selection of Dilution Water for Bacteriologic Examinations. C. T. Butterfield, Cincinnati.—p. 355.

Oxidation-Reduction Potentials in Relation to Growth of Aerobic Form of Bacteria. W. P. Allyn and I. L. Baldwin, Madison, Wis.—p. 369.

Anomalous Behavior of Tubercle Bacillus as Gram-Positive Organism with High Resistance to Gentian Violet. Esther Wagner Stearn and A. E. Stearn, Columbia, Mo.—p. 399.

Decomposition of Proteins by Micro-Organisms, with Particular Reference to Purified Vegetable Proteins. S. A. Waksman and R. L. Starkey, New Brunswick, N. J.—p. 405.

Journal of Experimental Medicine, New York

55: 829-999 (June) 1932

Comparison of Reducing Power of Some Typical Transplantable Tumors and Tumors Produced by Filtrable Viruses, with Appendix on Metabolism of Infectious Myxoma of Rabbit. E. S. G. Barron, Chicago. —p. 829.

Antipneumococcic Immunity Reactions in Individuals of Different Ages. W. D. Sutliff and M. Finland, Boston.—p. 837.

*Specific Antibody Response of Human Subjects to Intracutaneous Injection of Pneumococcus Products. M. Finland and W. D. Sutliff, Boston.—p. 853.

Reactions of Rabbits to Intracutaneous Injections of Pneumococci and Their Products: VIII. Interrelationships of Hypersensitiveness to Pneumococcus and Streptococcus. L. A. Julianelle and M. C. Morris, St. Louis.—p. 867.

Antipneumococcus Properties of Normal Swine Serum. W. H. Kelley, New York.—p. 877.

*Spontaneous and Acquired Active Immunity to Phenomenon of Local Skin Reactivity to Bacterial Filtrates. G. Shwartzman, New York. —p. 889.

Relation of Heart Weight to Basal Metabolism as Varied by Thyroid Administration. F. M. Smith and E. M. MacKay, La Jolla, Calif. —p. 903.

Virus Disease of Parrots and Parrakeets Differing from Psittacosis. T. M. Rivers and F. F. Schwentker, New York.—p. 911.

Therapeutic Value of Intramuscular Dosage of Type I Pneumococcus Antiserums. T. J. Curphey and H. B. Baruch, New York.—p. 925.

*Vaccination Against Yellow Fever with Immune Serum and Virus Fixed for Mice. W. A. Sawyer, S. F. Kitchen and W. Lloyd, New York.—p. 945.

Anemia of Scurvy: Effect of Vitamin C Diet on Blood Formation in Experimental Scurvy of Guinea-Pigs. S. R. Mettier and W. B. Chew, San Francisco.—p. 971.

Antibody Response to Pneumococcus Products.—The blood of sixty-three human subjects selected because of the absence of recent infections was studied by Finland and Sutliff for its content of specific antibodies against virulent strains of types I, II and III pneumococci before and after intracutaneous injections of minute amounts of pneumococcus products. The simultaneous injection of the specific polysaccharides of all three types of pneumococci and of proteins and autolysates derived from types I and II pneumococci was followed by the appearance or increase of pneumococcidal power in the whole defibrinated blood and, in most instances, by the appearance of mouse-protective antibodies and agglutinins for one or more types. A single intracutaneous injection of 0.01 mg. of the protein-free type-specific polysaccharide of either type I, type II or type III pneumococci or four similar daily injections was followed, in most of twenty-nine subjects, by the appearance of antibodies against the homologous but not against the heterologous type pneumococci. Some subjects showed a simultaneous lowering of a preexisting pneumococcidal power for heterologous or homologous types. A single intracutaneous injection of 0.1 mg. of pneumococcus protein in thirteen individuals was not followed by the appearance of specific antibodies to any appreciable degree. Single intracutaneous injections of small amounts of autolysates derived from virulent strains of type I, II or III pneumococci were followed in eleven subjects by a more or less general rise in the pneumococcidal power with the appearance of homologous type agglutinins and protective antibodies in about one third of the subjects.

Immunity to Phenomenon of Local Skin Reactivity to Bacterial Filtrates.—Shwartzman describes experiments in which he demonstrated spontaneous active immunity to the phenomenon of local skin reactivity to bacterial filtrates. In one experiment the immunity was nonspecific, while in others it appeared limited to one or two bacterial species. Intradermal vaccination of rabbits with bacterial filtrates induced active immunity to the phenomenon. The specificity of this immunity was tested with graded amounts of toxic factors. The combined intradermal and intravenous immunization in these experiments elicited two types of response; namely, (1) specific immunity, which was obtained in rabbits highly susceptible to the phenomenon (i. e., showing reactions with 1 reacting unit) and (2) nonspecific immunity, which was elicited in rabbits with partial spontaneous immunity (i. e., showing no reactions with 1 reacting unit but susceptible to 15 units one week later). Comparative studies on the reacting potency of "agar washings" and disintegrates (Besredka's method, freezing and thawing method) showed that the first washings of bacterial cells are considerably stronger than subsequent washings and disintegrates. These facts demonstrate once again the extracellular nature of the material necessary for the phenomenon.

Yellow Fever Vaccination.—After preliminary experiments in monkeys, Sawyer and his associates immunized fifteen persons by a single injection of a dried mixture of living yellow fever virus, fixed for mice, and human immune serum, with separate injections of enough additional serum to make up the amount required for protection. One person was similarly immunized by injecting immune serum and dried virus separately. By titration of the serums of vaccinated persons in mice, it was shown that the immunity rose in a few weeks to a height comparable to that reached after an attack of yellow fever and remained there throughout an observation period of six months. Yellow fever virus could not be recovered from the blood of vaccinated persons or monkeys, except when the latter had received less than the minimal effective amount of immune serum. Neutralization of yellow fever virus by immune serum took place very slowly in vitro at room temperature in the authors' experiments, and could not have been an appreciable factor in vaccination with the serum virus mixtures. A mixture of fixed virus and immune serum retained its immunizing power for eight months when dried in the frozen state and sealed in glass. It appears that the immunizing reaction after yellow fever vaccination was a part of a true infectious process, as was also the observed leukopenia.

Journal of Preventive Medicine, Chicago

6: 145-248 (May) 1932

*Statistical Analysis of Outbreak of Acute Anterior Poliomyelitis in San Francisco in 1930. J. C. Geiger and J. P. Gray, San Francisco. —p. 145.

Susceptibility of Bats to Infection with Horse Trypanosome, Trypanosoma Hippicum Darling, in Panama. L. H. Dunn, Panama, Republic of Panama.—p. 155.

State-Wide Study of Human Intestinal Helminths in Tennessee. A. E. Keller, W. S. Leathers and E. L. Bishop, Nashville, Tenn.—p. 161.

American Administrative Practice in the Control of Scarlet Fever. G. B. Darling and J. E. Gordon, Detroit.—p. 185.

Immunity to Superinfection and Cross-Immunity in Malarial Infections of Birds. W. Gingrich, Chicago.—p. 197.

Poliomyelitis in San Francisco in 1930.—Geiger and Gray call attention to the fact that the outbreak of poliomyelitis in San Francisco and in California as a whole during 1930 was the most extensive yet recorded for these districts. The incidence for San Francisco began to be above the average in June, 1930, and continued in epidemic proportions through the following March; 245 local and 50 nonlocal cases and 32 deaths were recorded during this period. No part of the city was free from

the disease, and the prevalence was directly proportional to the density of population. More than 75 per cent of the patients were hospitalized. Males were affected more frequently than females (ratio, 3:2); deaths were evenly divided between the sexes. While a preponderance of the cases occurred in the younger age groups, there were not a few in the older groups, even into the fifth and sixth decades. The fatality rate was higher among adults than in the lower age groups. An attempt was made to determine the types of onset and the symptoms and signs predominant in the early stages of the disease. In the cases that could be classified definitely, the gastro-intestinal type of onset was most frequent, with vomiting or constipation or both as the most prominent signs in the clinical picture. Diarrhea was uncommon. An analysis of the signs tabulated in the central nervous system type of onset would be unsatisfactory because of the lack of definition of the degree of severity and the added factor of varied interpretation by different observers. It may be stated, however, that retraction of the head, indicating meningeal irritation in most instances, occurred with some frequency. Headache, a valuable symptom under certain circumstances, is also difficult of analysis because of the personal equation, but it should be pointed out that, while headache of moderate type was most frequent in the case histories, the severe type was not rare. Fever was present in all but a few cases; the moderate range predominated, although there were numerous instances of relatively high temperatures. Attention has often been directed to the various types and degrees of pain in the early stages of poliomyelitis, causing frequent errors in diagnosis. Pain is usually present, varying from generalized pain comparable to what is seen in true influenza to pain localized in a single muscle group. Pain in the extremities generally preceded paralysis of the part involved and hence is a sign of value in prognosis. The most frequent locations of pain were the neck and back regions, with leg pains and generalized pain next in frequency. A definite interval between the onset of the disease and the onset of paralysis occurred in 154 of the local cases, this interval lying between two and five days in 116 instances (70 per cent). In the nonlocal series the same relative proportion obtains. In the paralytic cases, the many parts and the many combinations of parts paralyzed make detailed classification difficult. Involvement of the extremities, either singly or in combination, was most frequent, occurring in all but twenty-five of the paralyzed cases among the local group and in all but five of the corresponding cases in the other group. The use of convalescent serum appears to have been judicious. Of 167 local patients receiving serum, 109 (65 per cent) were treated on or before the third day, and 140 (83 per cent) on or before the fifth day. It is generally accepted that the serum, to be of benefit, must be administered before the onset of paralysis. Of the 167 local serum-treated patients, 90 (53 per cent) showed definite or apparent improvement, while 30 (18 per cent) showed no improvement. The same relative proportion obtained for a nonlocal group.

Journal of Urology, Baltimore

27: 507-606 (May) 1932

*Surgery of Hypospadias and Epispadias in Male. A. B. Cecil, Los Angeles.—p. 507.
*Primary Epithelioma of Urethra. T. J. Kirwin, New York.—p. 539.
Solitary Papilloma of Lower Ureter (Right) Secondary to Recurrent Papillomas of Bladder. H. A. Fowler, Washington, D. C.—p. 561.
*Congenital Solitary Hydronephrotic Infected Kidney; Pyelo-Ureteroplasty. T. D. Moore, Memphis, Tenn.—p. 581.
*Immediate Effects of Various Pyelographic Mediums on Mucosa: Experimental Study. E. G. Mark and E. T. Johnson, Kansas City, Mo.—p. 595.

Surgery of Hypospadias and Epispadias in Male.—Cecil believes that in attempting to reconstruct deformities of the urethra the urologic surgeon should familiarize himself thoroughly with the principles of plastic surgery. No result can be obtained without an absolute diversion of the urinary stream, and this is not likely to be brought about except by occlusion of the urethra by suture. No drainage tubes, probes or any other foreign bodies should be left in the newly formed urethra. The primary operation for the correction of the deformity of the penis should be done during the first two years of life. It should be complete and no other operation should be done until the deformity is proved to have been cured. Heteroplastic grafts are of no value for the reconstruction of the urethra. There is much experimental and clinical evidence against the use of isoplastic grafts and it is doubtful whether one should attempt to reconstruct a urethra from them. Autoplastic free grafts, such as the use of the appendix or the use of veins, arteries or free skin grafts after the method of Nové-Josserand, are unsatisfactory in reconstructing the urethra, and although urethral canals have been made by the use of this material the results have almost universally been bad. The advancement of the urethra operation of Beck is of use only in minor degrees of hypospadias, in patients who probably should not be operated on at all. In more extreme degrees of hypospadias it is likely to result in failure or in the production of a condition worse than previous to the operation. The Cantas operation of using a pedicle graft of the saphenous vein has not been sufficiently tried to warrant its use. Among other objections to it is that the vein is likely to be too small or is likely to be branched. Small base pedicle grafts, such as are exemplified by the Rochet method, are likely to leave fistula at the base of the pedicle graft. They have a tendency not to join in the development of the penis and to cause retraction of the penis and in some instances contraction of the caliber of the tube. The most successful method of reconstructing the urethra is by the method of Thiersch, which is applicable to all forms of hypospadias. Many cases of epispadias with incontinence are curable. Transplantation of the ureters to the intestine should be reserved for those cases in which one has utterly failed to reconstruct the vesical neck. The best method of reconstructing the bladder neck and urethra is the method proposed by Young.

Primary Epithelioma of Urethra.—According to Kirwin, stricture and chronic urethritis seem to have etiologic significance in the production of primary epithelioma of the urethra. About the only prominent symptom is obstruction of the urinary system or, at times, complete retention. These are common to so many other pathologic conditions arising in the urinary tract as to be of small diagnostic value. Biopsy is the only sure means of differentiation. If this is done early and immediate treatment instituted, the chances of relief are fairly good. Far advanced cases benefit but little from any kind of treatment. The author reports a case in which the original lesion close to the urinary meatus was excised with the bipolar cautery, the metastatic inguinal lymph nodes were removed, and the inguinal wounds treated, first by radon implantation and later by alpine light and high voltage roentgen irradiation. Examination after four months showed slight recurrence, but this was readily controlled by further cauterization. The patient remains in good condition. Complete roentgen examination of the skull, lungs, bones and internal organs was negative for metastasis.

Congenital Solitary Hydronephrotic Infected Kidney.—Moore points out that although unilateral renal agenesia occurs infrequently, it must be considered as a routine in any case in which nephrectomy is contemplated. Invariably, the status of the opposite kidney should be determined before operation. In the conservative treatment of hydronephrosis, many methods have been devised for the purpose of correcting obstructive conditions in the vicinity of the ureteropelvic juncture. The merits of these various procedures must be considered in their application to the individual case at the time of the operation. The factor of renal counterbalance is important in unilateral hydronephrosis; animal experimentation has not revealed positive proof as to whether or not disuse atrophy of the diseased kidney occurs after the other organ has undergone compensatory hypertrophy. The author reports details of a case in which a large infected hydronephrosis caused by a valvular type of obstruction existed, with congenital absence of the opposite kidney. The method of relieving the obstruction is described and the functional and urographic end-results are submitted.

Effects of Pyelographic Mediums on Mucosa.—Because of the constant injury to the bladder mucosa resulting from the use of 25 per cent sodium bromide even when no undue pressure or overdistention is present, and its marked hemolytic action, Mark and Johnson feel that it is not only unsuitable but dangerous as a urographic medium. Sodium iodide in 12.5 per cent solution, though causing a much less degree of hemolysis than sodium bromide, nevertheless produces quite a

recognizable edema of the mucosa and irritation. Iopax in 30 per cent solution causes approximately the same degree of hemolysis as 12.5 per cent sodium iodide, though its use is unaccompanied by any mucosal or submucosal change, and no evidence of irritation is found. Methiodal in 20 per cent (or normal) solution does not cause hemolysis and is totally free of any irritating qualities. Using either iopax or methiodal, one need no longer have any fear of bilateral pyelograms which are essential in the larger number of cases requiring roentgenographic renal and ureteral study. It becomes quite evident from these experiments that, while there can be no question that overdistention is productive of damage and pain, even in the use of mild solutions, the real factor in causing irritation and mucosal damage lies in the character of the drug itself and its immediate effects on the mucosa.

Kentucky Medical Journal, Bowling Green

30: 303-360 (June) 1932

Pathology and Physiology of Chronic Cholecystitis as Basis for Diagnosis and Treatment. G. Y. Graves, Bowling Green.—p. 308.
Heart Conditions. H. W. Gingles, Hardburly.—p. 314.
Present Status of Agranulocytosis. M. Flexner, Louisville.—p. 318.
Tularemia. J. M. Blades, Butler.—p. 323.
Present Status of Hemolysis in Blood Transfusion: Report of Fatal Case. C. Baron, Covington.—p. 326.
Bronchopneumonia. W. H. Joyner, Greenup.—p. 329.
Review of the University of Kentucky Bulletin Studies in Medical Service. R. W. Connor, Owensboro.—p. 332.
Unusual Urinary Obstruction: Case Report. S. C. McCoy, Louisville.—p. 337.
Some Professional Problems. A. Bell, Hopkinsville.—p. 338.
Calcification in Pulmonary Tuberculosis. O. O. Miller, Louisville.—p. 344.
Diagnosis of Duodenal Ulcer. W. T. Dowdall, Paducah.—p. 348.
Prophylaxis and Treatment of Chronic Nephritis. Latta Graves, Scottsville.—p. 350.
Shall We Continue to Perpetuate Feeblemindedness? H. C. Clark, Falmouth.—p. 354.
Management of Carcinoma of Breast. C. D. Enfield, Louisville.—p. 356.

Minnesota Medicine, St. Paul

15: 379-454 (June) 1932

Public Health Organization and the Medical Profession. A. J. McLaughlin, Chicago.—p. 379.
The Inevitable End of Public Health Work. W. G. Richards, Billings, Mont.—p. 382.
Periodic Health Examination: Discussion. M. C. Piper, Rochester.—p. 388.
Economic Therapeutics. A. H. Parks, Minneapolis.—p. 390.
Treatment of Club Feet (Talipes Equino Varus) in Infants. C. C. Chatterton, St. Paul.—p. 396.
Study of Incidence of Auricular Fibrillation. H. L. Smith, Rochester.—p. 403.
Angina Pectoris: History, Etiology and Mechanism. F. A. Willius, Rochester.—p. 406.
Treatment of Asthmatic Bronchitis with Iodized Oil. J. H. Taylor, Minneapolis.—p. 408.
Treatment of Chronic Morphine Intoxication. W. P. Gardner, St. Paul.—p. 410.
Present Status of Indications for Renal Sympathectomy. W. P. Herbst, Minneapolis.—p. 413.
Democedes. D. C. Collins, Rochester.—p. 416.
Leukorrhea: Two Common Causes. E. C. Hartley, St. Paul.—p. 423.

Nebraska State Medical Journal, Lincoln

17: 221-268 (June) 1932

Present Trends in Medicine. A. E. Cook, Randolph.—p. 221.
*Analysis of Results in Four Hundred and Eleven Consecutive Cases of Perineal Prostatectomy. E. Davis, Omaha.—p. 224.
Spinal Anesthesia: Part II. C. H. Arnold, Lincoln.—p. 230.
Reconstruction Procedures in Traumatic Lesions of Bone and Joint Where Conservative Methods Fail. H. F. Johnson, Omaha.—p. 234.
Artificial and Pseudovoice Following Complete Laryngectomy. P. L. Romonek, Omaha.—p. 238.
Nebraska Hospitals and Their Relation to the Practitioner. F. J. Bean, Omaha.—p. 243.

Analysis of Results of Perineal Prostatectomy.—Davis reports that there were nine deaths in a consecutive series of 411 cases of perineal prostatectomy under sacral block anesthesia (2.17 per cent). He states that the chief factors contributing toward maintaining a low mortality rate in prostatectomy are (1) adequate preliminary drainage, (2) the perineal route, (3) detailed attention to hemostasis, and (4) sacral block anesthesia. The chief uncontrolled and unavoidable hazard of prostatectomy today is massive delayed hemorrhage, coming on as late as the end of the second week and occurring in 2 per cent of cases. As determined by questionnaire blanks sent out after intervals of several months following prostatectomy, 82 per cent of these patients voluntarily classified themselves as well, 16 per cent improved, and 2 per cent unimproved. By far the chief reason why these patients tend to classify themselves as improved rather than well is in the persistence of varying degrees of urinary frequency, due to deep-seated and irremediable urinary tract infection. With respect to the matter of selection of cases, out of a total of 200 consecutive patients presenting themselves with varying degrees of prostatic obstruction, 118 were submitted to prostatectomy, 6 were sent home with suprapubic drainage tubes, with the decision pending as to the advisability of prostatectomy, while in 3 instances the patient's condition was considered such as definitely to contraindicate any consideration of prostatectomy. The author believes that the technic of sacral block anesthesia (for prostatectomy) may be made sufficiently exact so that the percentage of failure, formerly considered inevitable, may be entirely eliminated. In a series as yet uninterrupted, he has employed sacral block anesthesia for perineal prostatectomy in 262 consecutive cases without a single anesthesia failure.

New England Journal of Medicine, Boston

206: 1125-1180 (June 2) 1932

*Cancer of Colon. F. H. Lahey and Sara M. Jordan, Boston.—p. 1125.
Some Outstanding Facts from Studies of Committee on Costs of Medical Care. R. M. Smith, Boston.—p. 1132.
Anatomic Basis for Study of Splanchnoptosis: Ptosis en Masse and Its Relation to Body Form: Preliminary Communication. Agnes C. Vietor, Boston.—p. 1137.

Cancer of Colon.—Lahey and Jordan believe that the early diagnosis of carcinoma of the colon must be concluded on roentgen evidence by opaque and air enemas. Any patient with any alteration in colonic function should be investigated by the opaque enema with a question of a colonic new growth. The symptoms of carcinoma of the proximal colon are vague and usually not associated with the signs of obstruction. Patients with severe anemia should be investigated for the question of carcinoma of the cecum and ascending colon because of the association of anemia with this lesion. The symptoms of carcinoma of the distal colon are largely those of obstruction and are without severe secondary anemia. Patients with hemorrhoids should be carefully investigated as to the possibility that the underlying cause of the hemorrhoids is an early carcinoma of the rectum. One of the soundest principles of the surgical treatment of carcinomas of the colon is that preliminary enterostomy proximal to the lesion must be employed in all patients with obstruction. Resection of the colon by the Mikulicz plan is applicable to all segments of the colon except the transverse colon, where it can be done but is less satisfactory than at other levels. It is the safest method of removing segments of the colon. The authors describe a method of staggering the implanted loops of bowel on the abdominal wall. By this technic the Mikulicz plan of resection can be applied even to patients with moderate degrees of obstruction, since immediate decompression of the proximal loop can be accomplished as an additional measure.

New York State Journal of Medicine, New York

32: 643-705 (June 1) 1932

Social and Economic Problems Facing the Medical Profession. N. B. van Etten, New York.—p. 643.
*Study in Familial Achylia Gastrica, with Collateral Observations on Its Relations to Gastric Cancer and Pernicious Anemia. M. Golob, New York.—p. 647.
Management of the Office Diabetic. J. R. Scott, New York.—p. 652.
Subacute Bacterial Endocarditis. N. Strauss, New York.—p. 657.
*Diagnosis and Management of Hemophilia in Childhood. I. N. Kugelmass, New York.—p. 660.
Practical Points on Microscopic Grading of Carcinoma. A. C. Broders, Rochester, Minn.—p. 667.
Report of Case of Bacteremia Caused by Micrococcus Catarrhalis Following Tonsillectomy and Acute Polyarthritis, with Recovery. S. H. Curtis, Troy.—p. 672.

Familial Achylia Gastrica.—Golob reports the results of a study of familial achylia in a group of two brothers, a sister, and a half-brother born of a different mother. Both the sister and the half-brother died of gastric cancer, the former at the age of 40 and the latter at 31. In both cases the stomach

contents revealed all the stigmas of achylia. The other two brothers are living. It is interesting to note that there was another sister in the family who died of diabetes mellitus at 40, and yet another sister, still alive, having the same disease. The cases of achylia illustrate the practical application of preventive therapy; they undoubtedly suggest that cancer respects no age, and the physician relying on a "cancer age" indulges in a false sense of security. The search for the etiology of a true achylia often leads to the diagnosis of a grave malady. It serves both as a danger signal and as a path finder. Achylia is not merely a symptom of a disease but either an anatomic part of a disease complex or a precursor of an oncoming malady. The timely administration of hydrochloric acid may check bacterial activity and prevent the breakdown of the compensatory activities of the auxillary gastric mechanism. It is remarkably effective in gastrogenic diarrhea, pernicious anemia and combined spinal sclerosis, and it is the sine qua non in the therapy of benign achylia. Pernicious anemia must be both preceded and accompanied by achylia, which may be regarded as one of its etiologic factors, through its hemolytic toxin on the hematopoietic organs, and neurotoxin on spinal cord structures. Achylia is a potential forerunner of gastric cancer, laying a fertile soil for malignant implantation through irritation and lowered resistance. Complete anacidity and a short history are strongly indicative of carcinoma; if one adds to it the triad of anorexia, weight loss and progressive asthenia, the diagnosis is certain. Roentgen examination is made only to determine the extent of the region involved. On the other hand, a long history of digestive aberration with even a hyperacidity does not preclude a malignant condition, but if there is the same triad syndrome, a diagnosis of cancer should stand until eliminated. The symptoms of gastric cancer as detected by the conventional mechanical methods of examination are no longer symptoms but complications of the malady. Hence, awaiting the presence of these symptoms must give way to the detection of their approach. The harder it is to recognize gastric carcinoma, the better the prognosis.

Hemophilia in Childhood.—The criteria necessary and sufficient for the diagnosis of hemophilia are formulated by Kugelmass on the basis of experimental and clinical studies. Quantitative determinations of the constituents involved in blood coagulation show the hemophilic deficiency to be in the primary stage of the blood clotting mechanism. Hemophilic blood shows a strikingly low prothrombin content compensated by a correspondingly high antithrombin content. The platelets are normal in number but are physiologically defective, having a slow rate of disintegration. Hemophilic blood is characterized by a blood clotting index which is less than one tenth of the normal. The index constitutes the ratio of the concentration of the substances tending to clot over those tending to favor bleeding. Accordingly, the normal index of clotting function is 0.5 whereas the hemophilic clotting index is less than 0.05. The very low index of blood clotting function is absolutely diagnostic of hemophilia. The index of blood clotting function is increased many fold after transfusion, but the improved clotting lasts for only forty-eight hours. Transfusion does not alter the clotting function of blood in hemophilic persons with joint manifestations. Dietary protein, lipids, vitamins or minerals do not alter the deficient clotting function in hemophilia. Hemophilic persons show the absence of the female sex hormone in their tissues. Ovarian therapy, theelin, and so on produce no change in the hemophilic clotting mechanism. Serum injected and applied locally is not effective in controlling hemorrhage in hemophilia unless it is fresh and rich in thrombin. But nonhemophilic bleeders respond rapidly to any serum and to dietotherapy.

Ohio State Medical Journal, Columbus

28: 401-488 (June) 1932

Our Objective and Obligations: Observations on Medical Organization: Annual Address of Retiring President. D. C. Houser, Urbana.—p. 421.
The Doctor, the Organization and the Code: Inaugural Address of Incoming President. H. M. Platter, Columbus.—p. 427.
Brain Trauma: Mechanism from Pathologic Standpoint. N. W. Winkelman, Philadelphia.—p. 429.
Intra-Ocular Foreign Bodies. P. G. Moore, Cleveland.—p. 431.
Facts About the Injection Method of Treating Hemorrhoids. W. Teachnor, Sr., Columbus.—p. 437.

Public Health Reports, Washington, D. C.

47: 1147-1186 (May 20) 1932

Comparison of Trachoma Virulence in Different Sections of the United States. C. E. Rice, J. E. Smith and R. Sory.—p. 1149.

47: 1187-1238 (May 27) 1932

Prevalence of Venereal Disease in New Orleans, Louisiana. T. Clark and Lida J. Usilton.—p. 1187.
Value of Complete Routine Physical Examination of Prisoners. M. R. King.—p. 1197.

47: 1239-1284 (June 3) 1932

Action of Colloidal Paris Green on Larvae of Culex Apicalis: Preliminary Report. H. G. Grant, B. M. Newman and P. D. Wood.—p. 1239.

Radiology, St. Paul

18: 1051-1182 (June) 1932

*Preliminary Report on Continuous Irradiation of Entire Body. A. C. Heublein, Hartford, Conn.—p. 1051.
Cancer in the Young. M. J. Sittenfield, New York.—p. 1063.
Radiation Therapy of Cancer: Basic Principles, Their Application and Results. W. L. Mattick, Buffalo.—p. 1070.
Seven Thousand Angstrom Units Plus. R. C. Walker, Portland, Ore.—p. 1090.
*A Critic of Roentgen Signs of Infantile Scurvy: Report of Thirteen Cases. K. Kato, Chicago.—p. 1096.
The Dolichocolon. F. D. LaRochelle and E. E. Smith, Springfield, Mass.—p. 1111.
New Feature in Iodized Oils. F. R. Greenbaum, Chicago.—p. 1115.
Treatment of Mastoiditis with Roentgen Rays. W. L. Ross, Omaha.—p. 1124.
Records in Roentgen Therapy. C. L. Gillies, Cedar Rapids, Iowa.—p. 1131.

Continuous Irradiation of Entire Body.—Heublein presents theoretical considerations and practical observations which led him to the conclusion that it is desirable to test the value of prolonged continuous irradiation of the entire body in certain types of neoplastic diseases. At the Memorial Hospital in Hartford, an automatic roentgen-ray machine is in use in a special lead-lined ward in which four patients may be simultaneously and continuously irradiated. In addition, provision has been made for the administration to other patients of local intermittent treatments at a target-skin distance of 150 cm., making use of the same roentgen-ray tube. This machine is dependable and economical in operation. The cases selected for the long distance irradiation method were well advanced, and many presented widely disseminated lesions. This choice was made primarily to establish a tolerance dose for the entire body and in the hope of observing some beneficial clinical manifestation, such as a stimulation of some defense mechanism against malignant disease. The maximum dose which the entire body will tolerate has not yet been established. However, investigations to determine this dose are being carried on. At present, the author believes that 25 per cent of a full erythema dose of 750 r measured in air, delivered at the rate of 1.26 r per hour, is a safe dose. Clinical observations and extensive special laboratory tests confirm this opinion. To date, no pronounced beneficial clinical manifestations have become evident, although in some instances encouraging improvement has been noted. It is too early to say whether or not a favorable systemic effect has been, or can be, produced by this method. With intermittent local treatment at 150 cm., definite regressions have been noted in the radiosensitive group of cases. The number of cases in both groups is too small to permit any definite conclusions at this time, although it is believed that the evidence accumulated thus far fully warrants the continuation of the experiment with increasing dosage, within safe limits.

Roentgen Signs of Infantile Scurvy.—Kato believes that the majority of the roentgen signs of infantile scurvy are not pathognomonic. The continued use of such terms as the "Trümmerfeldzone" and "Wimberger's sign" as diagnostic of infantile scurvy leads to confusion. Pelkan's trial in the diagnosis of latent scurvy is a valuable adjunct, but it is not absolutely characteristic. Beading of the ribs is common to infantile scurvy and to rickets. Separation of epiphyses is most frequently found in infantile scurvy, but it may also be found in other conditions. The white line of Fraenkel is the least characteristic of scurvy, for it is merely a phenomenon of hypercalcification at the end of a long bone, which is seen in many diverse pathologic conditions. The one sign which

is absolutely unique in infantile scurvy is that of subperiosteal hemorrhage during the third stage of the disease. This can be only inferred clinically on examination of the limbs in the light of a suggestive history, but the final diagnosis must rest on roentgen examination. The author's conclusion is not to be interpreted to mean an attempt to minimize the diagnostic value of roentgenology but rather to emphasize the necessity of broadening the experience of clinicians and roentgenologists in proper evaluation and interpretation of the roentgen signs of infantile scurvy.

Surgery, Gynecology and Obstetrics, Chicago

54: 861-991 (June) 1932

*Chorio-Epithelioma of Uterus. A. H. Curtis, Chicago.—p. 861.
Is There a Closed Lymphatic System Connecting the Thyroid and Thymus Glands? K. S. Chouke, R. W. Whitehead and Alice E. Parker, Denver.—p. 865.
*The Healing of Wounds: Experimental Study to Show Influence of Body Dehydration. C. E. Bird, Louisville, Ky., and E. M. MacKay, La Jolla, Calif.—p. 872.
*Spinal Anesthesia: Summary of Clinical and Experimental Investigations, with Practical Deductions. J. O. Bower, J. H. Clark, G. Wagoner and J. C. Burns, Philadelphia.—p. 882.
*Postoperative Thrombosis, Thrombophlebitis and Embolism. F. W. Bancroft and Margaret Stanley-Brown, New York.—p. 898.
Time of Permeation of Colored Solutions Through Placenta of White Rat. C. M. Boucek, New Haven, Conn., and A. D. Renton, Pittsburgh.—p. 906.
Cheiloplasty for Advanced Carcinoma of Lip. H. E. Martin, New York.—p. 914.
Resection of Right Colon and Anastomosis of Ileum to Transverse Colon After the Plan of Mikulicz. F. H. Lahey, Boston.—p. 923.
Interstitial Pregnancy. J. E. Ash, Washingtn, D. C.—p. 930.
*Syndromes of Gastro-Ileostomy and Gastro-Ileac Ulcer. A. B. Rivers and D. L. Wilbur, Rochester, Minn.—p. 937.
*Treatment of Forme Fruste Type of Perforated Peptic Ulcer. H. A. Singer and R. T. Vaughan, Chicago.—p. 945.
*Transplantation of Tendons with Stabilization of Paralytic Talipes. G. A. Williamson, St. Paul.—p. 953.
Operation for Direct Inguinal Hernia. E. H. Hutchins, Baltimore.—p. 964.

Chorio-Epithelioma of Uterus.—Curtis believes that the incidence of chorio-epithelioma of the uterus has been overestimated. Not only is the disease rare but its presence has often escaped clinical diagnosis, so that cases have usually been available for study only after recognition in the pathologic laboratory. A brief report submitted by the author presents a case with a perfect history of chorio-epithelioma in which clinical observation was followed by necropsy and complete pathologic study immediately after death. Incident of this study, colored illustrations were made within the hours immediately following the necropsy, before postmortem discoloration had developed, in order to portray, in lifelike colors, the appearance of the uterine tumors and the visceral metastases. A feature of especial interest was the presence of an easily elicited positive Hegar's sign, which was not only evident during life but was confirmed at necropsy, before the removal of the uterus from the opened abdomen. The fact that Hegar's sign persisted in the presence of living chorionic cells, despite prolonged absence of the fetus, is worthy of note. The appearance of clinical evidence of chorio-epithelioma more than a year and a half after birth of an hydatid mole is also worthy of note. It has been generally assumed that evidence of malignancy may be depended on to appear at a much earlier date. After passage of a typical mole the patient should evidently be kept under close observation for an indefinite period of time.

The Healing of Wounds.—Bird and MacKay describe experiments which show that moderate dehydration in rats, comparable to states of dehydration observed clinically, result in striking weakness in gastric wounds and in the gastric walls elsewhere than at the wounds. These effects are marked up to at least fourteen days after operation, the limit of time to which the experiments were carried. It is suggested that dehydration has a marked inhibitory effect on the processes of repair in general and that even after as short a period as four days there is sufficient destruction of body protoplasm to weaken considerably many tissues, whether or not they have been operated on. Such experimental results demand a continued and reiterated emphasis on the value of an adequate supply of fluid for injured patients of all types. It is, of course, important to bear in mind that dehydration can neither be prevented nor cured by water alone. Sodium chloride must be applied in addition.

Spinal Anesthesia.—On the basis of experimental work on dogs, Bower and his associates conclude that the fall in blood pressure following the injection of an anesthetic into the subarachnoid space is not due to a collection of blood in the splanchnic area. When the anesthetic ascends to the fourth thoracic nerve roots or higher in the dog there is an associated dilatation of the heart. The marked fall in blood pressure is mainly cardiac. Paralysis of the intercostal and phrenic nerves interferes with normal chest expansion and diaphragmatic excursion, causing a damming back of venous blood in the right heart and its tributaries. When the ascent of the anesthetic in the spinal canal is gradual, the blood pressure drops gradually and reaches its minimum in from fifteen to twenty minutes. When the anesthetic ascends rapidly and sufficiently high to affect not only the nerves of respiration but also the respiratory and vasomotor centers, the fall in arterial pressure is almost immediate but may be preceded by an asphyxial rise. Sudden deaths following intraspinal injections may be cardiac, cardiac and respiratory, or respiratory. Epinephrine and ephedrine did not prevent cardiac dilatation in the authors' experiments. The Drinker respirator alone will resuscitate an animal that has received the full adult dose of a spinal anesthetic into the cisterna. Up to the present time there is no known method of absolutely preventing deaths from spinal anesthesia, but artificial respiration offers the best means for combating respiratory embarrassment and the fall in arterial pressure.

Postoperative Thrombosis, Thrombophlebitis and Embolism.—Bancroft and Stanley-Brown believe that loose abdominal dressings, early postoperative feeding, and administration of fluid relieve postoperative distention and distress and may diminish thrombosis. Blood studies show that certain individuals are more prone to develop thrombosis than others. The blood abnormalities can frequently be improved by diet and intravenous medication. There are probably substances liberated in the blood through the effects of operative and postoperative trauma and infection that tend to change normal into abnormal clotting factors. The elimination of operative and postoperative trauma should diminish this incidence. Routine blood studies frequently show alterations in the clotting factors before the onset of thrombosis and thrombophlebitis. It is the authors' belief that in a number of cases thrombosis and embolism may be aborted by administering a diet low in fats and proteins and the intravenous administration of sodium thiosulphate.

Syndromes of Gastro-Ileostomy and Gastro-Ileac Ulcer.—Rivers and Wilbur call attention to the fact that the general characteristics of secondary peptic lesions which occasionally occur about a gastrojejunal stoma can be reduplicated even to certain minute histopathologic characteristics by similar lesions which may develop subsequent to the formation of anastomosis between the stomach or the jejunum and the lower part of the ileum. Clinical evidence is suggestive that the potentiality for the development of peptic lesions arises whenever and wherever any segment of intestinal mucosa is exposed to the eroding action of the gastric chyme. It would appear that a syndrome fairly characteristic for gastro-ileostomy can be formulated. If, following an operation performed for a gastric lesion, particularly if there is some evidence that a side-tracking operation had been attempted, the patient begins to lose weight, to have lienteric diarrhea, fecal vomiting, and fecal belching, and to lose weight rapidly despite normal appetite and normal ingestion of food, the suspicion should arise that an anastomosis has been made erroneously between the stomach and the ileum or colon. Similar symptoms may be produced by anastomosis between the jejunum and the ileum or colon. If, following a period during which such symptoms have developed, pain is superimposed, and if this pain is situated lower than the original pain and arises from thirty minutes to several hours after meals, if it is referred downward or through to the back and is to any degree amenable to the ingestion of food or to the taking of an alkali, the presence of a gastro-ileac ulcer may well be suspected. The surgical formation of gastro-ileostomy in itself may not be productive of definite symptoms, because in certain cases the pylorus remains patent and maintains its physiologic function so that most of the food reaches the duodenum and the small intestine in the normal fashion, thus preventing emaciation, dehydration, and lienteric stools. The

more the gastric contents leave the organ through the stoma, the more definite the syndrome of gastro-ileostomy will become.

Treatment of Forme Fruste Peptic Ulcer.—The plan of treatment used by Singer and Vaughan for forme fruste perforations in gastric ulcer is as follows: Practically all patients seen within the first twenty-four hours of onset are operated on, since in the early stage it is difficult or impossible to determine whether or not the rupture is firmly closed and leakage has ceased. When the patient is seen for the first time during the second twenty-four hours and it can be determined with a reasonable degree of certainty that the perforation is securely sealed and the peritonitis is limited and receding, the authors are inclined to refrain from surgical intervention. If there is any doubt as to the closure of the perforation, immediate operation is employed. If the patient is first seen after the second postoperative day, it is generally a simple matter to decide whether or not spontaneous closure with only insignificant leakage has occurred. A peritonitis which is still diffuse and active at this time indicates that the perforation is not the forme fruste type. In the nonsurgical treatment of the late forme fruste ruptures, the stomach when distended with fluid is aspirated by siphonage, the patient is required to lie continuously on the left side, and food and fluids by mouth are withheld for from three to four days or even longer. Fluids are furnished by proctoclysis and hypodermoclysis. The authors wish to sound a note of warning against the indiscriminate application of these principles of treatment. The recommendations submitted by them apply exclusively to forme fruste perforations. The presence of only slight or moderate improvement during the first twenty-four hours does not constitute proof of a forme fruste rupture or indicate that leakage has been completely checked. Unless the recovery from the peritonitis is almost complete, a forme fruste perforation cannot be assumed. If one cannot be reasonably certain of the type of perforation present, the patient is best treated according to accepted current teaching.

Transplantation of Tendons with Stabilization of Paralytic Talipes.—According to Williamson, final operative treament in infantile paralysis should not be undertaken until the residual stage at least two years after the onset of the disease has been reached. In untreated cases, deformities should be corrected and a period of conservative treatment by physical therapy and mechanical fixation instituted before any operative treatment is undertaken. Transplantation of tendons, although attractive from a theoretical standpoint, has not proved satisfactory in itself. As stability of the feet with freedom from painful lateral deformities is the most desirable end-result, an operation designed to fuse joints through which the deformities occur should be performed. Any lateral muscles having useful power must be transplanted into the achilles tendon or front of the foot as indicated. Children should be at least 6 years and preferably over 10 years of age before any bony operation is done. A brief consideration of the rules governing the transplantation of tendons is offered together with a brief description of subtalar arthrodesis. A change in the nomenclature of operative procedures to that taught at present in the medical schools is suggested. Six cases are briefly reported.

Tennessee State Medical Assn. Journal, Nashville

25: 165-305 (May) 1932

Will Future Policies of Organized Medicine be Aggressive or Submissive? T. R. Ray, Shelbyville.—p. 165.
*Problems in Treatment of Obstructive Lesions of Biliary Tract. W. Walters, Rochester, Minn.—p. 169.
Personality as Factor in Therapeutics. W. O. Brickell, Friendsville.—p. 175.
Congenital Malaria: Report of Cases. N. H. Bare, Batang, Hsikang, China.—p. 178.
Laryngeal Tuberculosis with Alcohol Blocking of Internal Laryngeal Nerve During Advanced Stage. D. H. Anthony, Memphis.—p. 182.
"The Doctor as a Witness." B. S. Rhea, Lebanon.—p. 188.

Treatment of Obstructive Lesions of Biliary Tract.—Walters directs attention to the effects of cholecystitis on the liver, on the common and hepatic ducts, and on the pancreas, and to the beneficial effects of cholecystectomy, with prolonged drainage of the common bile duct, as was noted in a group of patients who were jaundiced at the time of operation, but in whose common or hepatic ducts there were no stones. It is pointed out that penetrating ulcers of the posterior duodenal wall perforating into the pancreas produce a group of symptoms that simulate biliary obstruction. Frequently these ulcers pass unrecognized because of the normal appearance of the anterior duodenal wall. Other significant matters of which account is taken are an abnormally prolonged coagulation time of the blood, a change in the color, consistence and conformation of the liver, and a change in the color, quantity and quality of bile that drains out. These seem to be indexes of hepatic function.

Texas State Journal of Medicine, Fort Worth

28: 1-64 (May) 1932

Treatment and Results in Pulmonary Tuberculosis. J. A. Sevier, Colorado Springs, Colo.—p. 6.
Cancer and Irritative Lesions of Cervix. F. C. Beall, Fort Worth.—p. 8.
Preventive Frame of Mind in Obstetrics. H. R. Robinson, Galveston.—p. 11.
Railway Accidents and Surgery Thirty-Five Years Ago and Now. H. A. Barr, Beaumont.—p. 17.
Diagnosis and Treatment of Affections of Lumbosacral Region. W. C. Campbell, Memphis, Tenn.—p. 19.
Early Diagnosis of Intestinal Obstruction by Roentgen-Ray Examination. J. Q. Graves and J. G. Snelling, Monroe, La.—p. 25.
Spontaneous Pneumothorax in Children: Case Reports. L. C. Sams, Dallas.—p. 27.
Practical Use of Electrocardiogram. C. D. Strother, Sherman.—p. 29.
Modern Technic in Traumatic Surgery, with Demonstration of a New Clavicle Brace. C. Thomas, Houston.—p. 33.
Hypertension in Railway Employees. O. F. Gober, Temple.—p. 36.
Preventive Medicine in Commercial World. H. W. Stanley, Longview.—p. 38.
New Era in Medical Economics. W. F. Starley, Galveston.—p. 40.

Virginia Medical Monthly, Richmond

59: 129-196 (June) 1932

Preventive and Therapeutic Aspects of Central Nervous System Syphilis in General and Institutional Practice. D. C. Smith and R. E. Glendy, University.—p. 129.
Relation of Certain Pelvic Conditions to Remote Causes and Effects. J. C. Hirst, Philadelphia.—p. 134.
Hay Fever, with Comments on Past Season in Richmond. W. B. Blanton, Richmond.—p. 140.
Iodine Fast Hyperthyroidism: Problem in Treatment of Goiter. L. D. Keyser, Roanoke.—p. 144.
Gastric Cancer. M. O. Burke, Richmond.—p. 150.
Geriatrics. J. R. Hamilton, Nassawadox.—p. 153.
Recent Developments in Prostatic Surgery. J. F. Geisinger, Richmond.—p. 157.
Myocardosis. W. P. Adams, Norfolk.—p. 161.
Acute Appendicitis in Children. J. S. Horsley, Jr., Richmond.—p. 165.
Work of Virginia Health Department for Child Health and Protection. B. B. Bagby, Richmond.—p. 169.
Complete Outward Dislocation of Patella. W. B. Huff, Roanoke.—p. 172.
Granulocytopenia Due to Streptococcus Viridans: Report of Case. F. W. Shaw and R. L. Creekmur, Richmond.—p. 173.
Old Family Physician, Slowly But Surely, Coming Back into His Own. B. C. Keister, Washington, D. C.—p. 174.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

40: 279-342 (June) 1932

*Ureter After Nephrectomy. A. J. Scholl, Los Angeles.—p. 279.
*Surgery of Undescended Testes: Modified Torek Operation. A. B. Hepler, Seattle.—p. 286.
Surgery of Hypospadias and Epispadias in Male. A. B. Cecil, Los Angeles.—p. 297.
Fused Kidney with Bilateral Calculi and Unilateral Hydronephrosis. A. H. Peacock, Seattle.—p. 316.
Episiotomy. A. Mathieu, Portland, Ore.—p. 330.

Ureter After Nephrectomy.—Scholl believes that in the majority of cases, even when the ureter is extremely dilated, it is not necessary to remove the ureter when doing a nephrectomy. In cases in which the ureter and any retained contents are infected and obstruction to the lower ureter occurs, this obstruction must be relieved. If it is impossible to relieve this obstruction by conservative methods, a primary nephroureterectomy or a secondary ureterectomy should be performed.

Surgery of Undescended Testes.—According to Hepler, the functional imperfection of the undescended testis is the result of degeneration of the germinal epithelium from thermic changes because of the lack of scrotal protection. Because these changes do not take place before puberty, when there is an attempt to elaborate a mature germinal epithelium, placing the testis in the scrotum before this period will conserve its function and permit it to develop normally. The essential features of a successful orchiopexy are a careful and complete separation of the component structures of the spermatic cord

without interference with the blood supply of the testis, and the temporary fixation of the testis to some structure outside the scrotum to guard against retraction until this inevitable tendency has been overcome. The importance of this temporary scrotal and testicular fixation cannot be overemphasized. The author describes a modification of the Torek operation which has given satisfactory results in twelve cases in the last year.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

9: 97-140 (April) 1932

Hypnosis and Anesthesia. B. Hollander.—p. 90
Remarks on Anesthesia and Analgesia. C. C. Marston.—p. 124.

British Medical Journal, London

1: 873-922 (May 14) 1932

*Vasovagal Syncope and Carotid Sinus Mechanism, with Comments on Gowers's and Nothnagel's Syndrome. T. Lewis.—p. 873.
*Effect of Pituitrin in Malignant Disease: Clinical Observations. E. W. Riches and M. Kremer.—p. 877.
*Septic Foci and Normal Labor. Helen Leyton.—p. 880.
Spinal Anesthesia in Acute Obstruction. A. S. D. Russell and B. R. Sworn.—p. 882.
*Observations on Treatment of Chronic Ulcers of Leg. M. Umanski.—p. 885.

Vasovagal Syncope and Carotid Sinus Mechanism.—Lewis states that thirteen years ago he became interested in what may be called common fainting attacks, or, more precisely, vasovagal syncope. Although he described his type of syncope in young soldiers in ill health, he recognized then, and has recognized since, that its incidence is wide. It is, in fact, the commonest form of syncope or fainting. It occurs in both sexes; it affects the young especially but by no means exclusively. There are states of the body that can be named as predisposing to it. Thus it is more usual in people who are out of condition or actually in poor health; it is more frequent after an illness or chronic infection. The presence of fatigue, a period of fasting, confinement to an overheated, overcrowded room, are not unusual attendant circumstances. The central feature of the attack is the syncope. In some cases the loss of consciousness occurs without warning of any kind and may then result in a heavy fall and injury. More usually the subject is aware that fainting is imminent and sits or lies down deliberately, or slips, or falls more slowly and involuntarily to the ground. The warning consists of a feeling of instability or uncertainty, a dimming of vision, and a feeling of giddiness. There is never any sense of rotation or of objects swinging around before the eyes, often a valuable point in differentiating auditory vertigo. The attack occurs rarely, if ever, while the subject is lying down, a point that in the history is often crucial in differentiating the attack from major attacks of cardiac syncope or epilepsy. From the start there is a progressive lowering of blood pressure and almost always a steep fall of heart rate, the pulse usually becoming imperceptible and the heart rate falling to 50 or 40 (unusually to 30 or 20) beats a minute. Pallor accompanies this fall of blood pressure; increasing in intensity, it ultimately becomes extreme in the face but is absent or much less evident in dependent parts, such as the hands. This pallor is of the type associated with simple drainage of blood from the skin to dilating visceral vessels. The cerebral manifestations indicate the degree and duration of cerebral anemia and, from the standpoint of the circulation, are to be regarded as incidental. When the circulatory changes happen gradually, syncope is led up to by feelings of insecurity and dimness of vision, and objectively by incoordination, confusion of speech, restlessness, yawning, and decreasing response to questions and to physical stimuli; actual loss of consciousness with flaccidity is the rule. If the changes are sufficiently profound, the pupils dilate and the conjunctival reflex vanishes; there may be slight clonic movements of the face, upper limb, and trunk. The tongue is not bitten, nor is the urine passed. In the severer attack, respirations are slow, deep and sighing; sweating is almost invariable, breaking out on lips and forehead, or over the body generally; usually free, it sometimes drenches the clothing. The author also calls attention to the fact that in recent years much interest has been aroused in a mechanism connected with what is now called the sinus caroticus. This mechanism has been shown to exercise a powerful controlling influence on heart rate, blood pressure and respiration, and especially in regulating the circulation to the brain. A rise of pressure within the carotid sinus results in a reflex lowering of heart rate and of systemic pressure; the former is produced through the vagus, and the latter through vasomotor nervous channels and through an effect on suprarenal secretion. The carotid artery contains the receptor part of the mechanism, the glossopharyngeal nerve conveys the impulse to the medulla; here the impulses exert two chief influences—they inhibit the heart and they depress vasomotor tone. This remarkable and seemingly purposive grouping of reflex cardiovascular effects also occurs when the depressor nerve is stimulated; it must surely depend, therefore, on a close linkage of the efferent channels by central parts of the nervous mechanism. And, given this linkage, it is highly probable that the central and efferent parts of this mechanism are disturbed in the clinical syndrome of vasovagal syncope, in which strong vagal effects are likewise combined with depressor vasomotor effects.

Effect of Solution of Pituitary in Malignant Disease.—Riches and Kremer report the results they obtained in the treatment of nine persons with malignant tumors by means of injections of solution of pituitary. Except in one case, in which there was a local diminution in the edema of the tongue overlying the growth, there was no beneficial effect that could be attributed to the injections. All the cases followed the usual course of the disease for the particular type of growth. In no case was life prolonged, nor was there regression of any of the growths.

Septic Foci and Normal Labor.—In an analysis of the records at the Oxford Maternity Home for the five years 1926 to 1930, Leyton found that the average length of normal labors in that institution has increased. The number of normal women living in the town of Oxford who had long labors (primiparas over twelve hours and multiparas over six hours) increased from 19.26 per cent in 1926 to 45.25 per cent in 1930. Among the women living in the country districts around Oxford it rose from 6 per cent in 1926 to 13 per cent in 1927, 19.5 per cent in 1928, 52.75 per cent in 1929, and 47.73 per cent in 1930. The only common factor found in cases of long labor was evidence of a chronic septic focus. A study of the temperature charts of patients in whom a chronic septic focus had been noted at the antenatal clinic revealed the fact that their temperature usually rose to 99 F. on three or more occasions during the puerperium (usually ten days). An analysis of the notes of the other normal cases which showed a rise of temperature on three or more occasions during the puerperium showed that these almost invariably were long labor cases, and, conversely, that short labors had an even temperature during the puerperium. Comparatively short labors are appearing in the recent records more rarely, and the actual average length of time spent in labor has increased by two hours in the last five years.

Chronic Ulcers of Leg.—From many years' experience in general practice, confirmed by recent clinical and bacteriologic tests, Umanski has come to the conclusion that even the most extensive ulcers of the leg of nonspecific character may heal under adequate ambulatory local treatment, provided the patient's general health is not too greatly impaired. The treatment should be directed toward eliminating microbic infection and stimulating the inherent natural forces of repair of the damaged tissues. A solution of 8 to 12 per cent of balsam of peru in glycerin and alcohol answers this purpose best, since not only has it a bactericidal action on the pyogenic organisms of the ulcer but it simultaneously promotes repair of damaged tissues by stimulating the granulating as well as the epithelization process. Glycerin acts as a good excipient for the balsam of peru and is useful as an exosmotic and hypertonic for draining ulcers and intensifying the antiseptic and penetrative action of the balsam of peru. Other methods should not be used until the method described has been given a fair trial. In ulcers of distinctly varicose character, some support of the limb by elastic bandages may be applied for some time, preferably only during the daytime.

Guy's Hospital Gazette, London

46: 77-96 (March 5) 1932

Suprarenal Gland. W. N. Mann.—p. 78.
Some Points in Prophylactic Treatment of Pyorrhea. C. W. Shuttleworth.—p. 83.
Zondek-Aschheim Reaction and Early Diagnosis of Pregnancy. P. M. F. Bishop.—p. 89.

Indian Journal of Medical Research, Calcutta

19: 987-1238 (April) 1932. Partial Index

Comparative Value of Antiplague Bilivaccine and Haffkine's Plague Prophylactic. B. P. B. Naidu and R. G. Sathe.—p. 987.
*Studies on Serum Proteins in Leprosy, with Especial Reference to Hydnocarpus Treatment. G. R. Rao.—p. 993.
Note on Type of Cholera Bacteriophage Isolated from Cases During Small Epidemic of Cholera in Madras. C. G. Pandit and R. S. Rao.—p. 1019.
Note on Antigenic Structure of Secondary Cultures Obtained with Three Types of Cholera 'Phages and a Strain of Cholera Vibrio. C. G. Pandit and R. S. Rao.—p. 1023.
Some Facts About Incidence of Splenomegaly in Bengal. M. N. De.—p. 1029.
Protein Graphs in Syphilis with Their Relation to Wassermann Reaction. R. B. Lloyd.—p. 1055.
Constant Humidity Apparatus for Mosquitoes. M. O. T. Iyengar and M. K. P. Sarathy.—p. 1091.
*Electric Charge of Erythrocytes: Part I. Effect of *p*H and Quinine Dihydrochloride. R. N. Chopra and S. G. Chaudhury.—p. 1115.
Further Observations on Seasonal Variation in Hookworm Infection. P. A. Maplestone.—p. 1145.
Researches on "Stone": Part XIII. Roentgen-Ray Diffraction Studies of Calculi. S. Ranganathan.—p. 1153.
Infection of Stratified Epithelium in Leprosy. E. Muir and S. N. Chatterji.—p. 1163.
Vital Capacity of One Hundred and Three Male Medical Students in South India. B. T. Krishnan, Assisted by C. Vareed.—p. 1165.
*Experiments on Protection of Monkeys with Antivaccinial Serum Against Viruses of Vaccinia and Variola. C. G. Pandit, K. P. Menon and M. O. Sahib.—p. 1185.
Note on Blood Cholesterol in Osteomalacia. T. A. Hughes, D. L. Shrivastava and K. S. Malik.—p. 1205.

Serum Proteins in Leprosy.—Rao presents the results of a study of the serum proteins in 252 cases of leprosy, with especial reference to hydnocarpus treatment and in fifty-six healthy controls. Serum albumin shows a significant reduction in lepers as compared with healthy controls and this reduction is probably caused by leprosy per se. Lepers of all types, except certain phases, have a considerably higher globulin value than the healthy controls and the untreated leper controls. The effects of an injection of any hydnocarpus preparation seems to be a marked increase in the globulin value in all types of cases detectable on the second day after the injection. The further changes in the serum globulin on other days after the injection are described. A certain difference in the behavior of the globulin value in the two main types of lepers, namely, cutaneous and neural, was noted. The formaldehyde test in uncomplicated cases of leprosy is never positive. There seems to be no definite relationship between solution of formaldehyde coagulation and serum globulin in lepers or lepra reactions.

Electric Charge of Erythrocytes.—According to Chopra and Chaudhury, the negative electric charge of erythrocytes in isotonic solution of dextrose is more susceptible to changes in ionic environment than in physiologic solution of sodium chloride. The higher the alkalinity of the environment, the greater is the negative charge. The greater diminution in the negative charge on the alkaline side of the medium in presence of a definite concentration of quinine dihydrochloride shows a relatively higher absorption of basic alkaloidal ions. These facts suggest that the higher activity of quinine salts in an alkaline solution is at least partly due to the relatively higher absorption of the alkaloidal ions in such a medium.

Protection with Antivaccinal Serum Against Viruses of Vaccinia and Variola.—The protective action of antivaccinial serum obtained from hyperimmunized buffaloes was studied by Pandit and his associates in experimental infection of monkeys with the viruses of vaccinia and variola. The viruses were introduced by scarification and the serums were given subcutaneously in all cases. When the serum was administered along with the virus, a considerable degree of protection was obtained against the viruses both of vaccinia and of variola. When the serum was given at varying intervals, after vaccination with vaccine lymph, no absolute protection was demonstrated in any case but the course of vaccination was modified to a slight extent. On the other hand, the serum gave considerable protection against variola virus even though it was administered four hours after the virus was introduced by scarification. Even if the serum was given twenty-four hours after, the course of the reaction was considerably modified. Serum obtained from convalescent cases of smallpox showed a much higher degree of protection than did that obtained with the buffalo immune serum. The results warrant an extension of efforts both to produce from animals an antivaccinial serum of high potency and to investigate the benefit that may be obtained by the use of convalescent human serum.

Indian Medical Gazette, Calcutta

67: 241-300 (May) 1932

Rheumatism in India. E. H. V. Hodge.—p. 241.
Alepol in Treatment of Leprosy. A. D. Bhandari.—p. 244.
Observations on Plasmodium Infection Which Causes Hemoglobinuria in Certain Species of Monkey. L. E. Napier and H. G. M. Campbell.—p. 246.
Curative Value of Locally Prepared Sample of Sulpharsenobenzene: Thiosarmine: Part I. B. G. Mallya and B. B. Maity.—p. 249.
Cytologic Studies of Blood and Tissues in Kala-Azar and Associated Conditions: Part I. Supravital Staining Technic. L. E. Napier, K. V. Krishnan and J. C. Lal.—p. 251.
Observations on Malaria in Puri District, Orissa. M. K. P. Sarathy.—p. 254.
Prognostic Value of Aldehyde Reaction in Kala-Azar. R. N. Chopra and S. G. Chaudhury.—p. 260.
Acriflavine as Counterstain in Ziehl-Neelsen Method of Staining. H. T. Ince.—p. 262.
Preliminary Note on New Types of Cholera 'Phage: Types D and E. C. L. Pasricha, A. J. de Monte and S. K. Gupta.—p. 262.

Irish Journal of Medical Science, Dublin

No. **76:** 145-192 (April) 1932

Advent of the County Medical Officer of Health. J. A. Harbison.—p. 145.
Resection of Presacral Nerve for Intractable Dysmenorrhea Complicated by Severe Bleeding. D. J. Cannon.—p. 150.
Note on Menstruating Mucosa of the Human Uterus. Ninian Falkiner.—p. 159.
Blood Groups and Paternity. G. C. Dockeray.—p. 163.
Rhinoplastic Surgery Through the Ages. A. B. Clery.—p. 170.
Note on Tuberculosis of Wrist. T. J. D. Lane.—p. 177.
Intravenous Liver Therapy in Pernicious Anemia. E. T. Freeman.—p. 182.

Journal of Pathology and Bacteriology, Edinburgh

35: 301-476 (May) 1932

Further Account of Trinidad Outbreak of Acute Rabic Myelitis: Histology of Experimental Disease. E. W. Hurst and J. L. Pawan.—p. 301.
*Classification of Cancer of Rectum. C. E. Dukes.—p. 323.
Pathology of Aneurysm: Review of One Hundred and Sixty-Seven Autopsies. H. G. Garland.—p. 333.
*Malignant Melanotic Tumor of Ganglion Cells Arising from Thoracic Sympathetic Ganglion. W. G. Millar.—p. 351.
Medullo-Epitheliomas of Brain and Retina. T. B. Davie.—p. 359.
*Isolation of Motile Organisms from Apparently Nonmotile Cultures of B. Typhosus, B. Proteus, B. Pestis, B. Melitensis, and so on. D. B. Colquhoun and J. Kirkpatrick.—p. 367.
Occurrence of True Bone Within Renal Calculus. G. Stuart and K. S. Kirkorian.—p. 373.
Effect of Carbon Monoxide and Other Agents on Rate of Tumor Growth. J. A. Campbell.—p. 379.
Interstitial Reactions Caused by Various Dusts and Their Influence on Tuberculous Infections. E. H. Kettle.—p. 395.
Transmission of Fowl-Tumors to Pheasants. C. H. Andrewes.—p. 407.
Abnormalities of Mouse Suprarenal. R. Whitehead.—p. 415.
Fetal Rickets. J. P. Maxwell, C. H. Hu and H. M. Turnbull.—p. 419.
Tumor Immunity: II. Antiserum Treatment of Spontaneous Mouse Carcinoma. T. Lumsden.—p. 441.
Fat Mobilization in Starvation. J. H. Dible.—p. 451.

Cancer of Rectum.—Cancers of the rectum are divided by Dukes into A, B and C cases according to the extent of spread. A cases are those in which the growth is limited to the wall of the rectum; B cases those in which there is extrarectal spread but no lymphatic metastases; C cases those in which metastases are present in the regional lymph nodes. A striking difference is found in the operative mortality rate and in the survival period after operation in these three groups. There is reason to believe that in A cases the disease is completely eradicated by rectal excision, and the excellent results of operative treatment confirm the opinion that lymphatic metastases are not found until a rectal carcinoma has spread by direct

continuity to the extrarectal tissues. A good prognosis is justified also in B cases, though slightly less favorable than in A. The results of surgical treatment in C cases are disappointing.

Melanotic Tumor of Ganglion Cells.—Millar describes a case of a highly malignant tumor composed of cells of nervous origin whose structure approximated, in a greater or lesser degree, that of ganglion cells. The more highly differentiated ganglion cells were loaded with pigment; this was a true melanin and was present in sufficient quantity to make parts of the tumor as black as an ordinary cutaneous melanoma. The author adduces evidence to show that the tumor arose from nerve cells in the seventh left thoracic sympathetic ganglion. In view of the undoubted nervous origin of this tumor, he believes that it is both possible and likely that a similar origin can be postulated for some at least of the melanomas arising in the suprarenal medulla.

Motile Organisms from Nonmotile Cultures.—Colquhoun and Kirkpatrick call attention to the fact that when grown on semisolid medium, e. g., one containing 0.3 per cent agar plus 5 per cent gelatin, many organisms develop motility which are nonmotile when grown in the ordinary fluid or solid mediums. Motile strains have been recovered in this way from nonmotile cultures of Bacillus typhosus, Bacillus proteus, the Salmonella group and Bacillus pestis, Bacillus mallei and Brucella melitensis. In certain cases the original nonmotile cultures when stained for flagella showed the presence in abundance on such structures, e. g., Bacillus typhosus from the feces of a chronic carrier. In others, e. g., Bacillus suipestifer, flagella were extremely scanty, only a few bacilli showing a single flagellum. In others, again, no flagella could be demonstrated. Certain nonmotile strains of Bacillus typhosus, Bacillus pestis, Bacillus dysenteriae Shiga and Bacillus dysenteriae Flexner-Y failed to develop flagella and motility after repeated subculturing in semisolid mediums. A satisfactory explanation of the phenomenon described has not been obtained. But the evidence suggests that the development of flagella and motility depends on a suitable viscosity of the medium in which the organisms are growing.

Journal of Tropical Medicine and Hygiene, London

35: 145-160 (May 16) 1932

Treatment of Schistosomiasis Haematobium. R. Girges.—p. 145.
Copper-Colored Variety of Caraate Caused by Trichophyton Megnini (Tr. Rosaceum). V. Puntoni and E. J. Pampana.—p. 154.
Culture of Bacillus Tuberculosis on Petragnani's Medium. C. F. Cerruti.—p. 157.

Lancet, London

1: 1079-1130 (May 21) 1932

*Control of Carbohydrate Metabolism. J. J. R. Macleod.—p. 1079.
*Injection of Umbilical Vein in Retained Placenta. D. W. Currie.—p. 1087.
*Serum Agglutinations to Typhoid Group in Cases of Pulmonary Tuberculosis. J. R. A. Madgwick and F. Partner.—p. 1091.

Control of Carbohydrate Metabolism.—Macleod states that from the evidence at present available it may be justifiable to postulate that when the requirements are more or less steady, the rate of sugar production is regulated by alterations in the balance between insulin and epinephrine in the blood, but that when there is a sudden call for sugar to meet the demands of great muscular activity, direct nervous stimulation of sugar secretion by the liver is set up. As to how the balance between insulin and epinephrine is adjusted, it is possible, since the secretion of each of these hormones is subject to nerve control, that the sugar concentration of the blood supplying the nerve centers is the stimulus that acts on them. In the light of the experiments which the author describes, these centers are probably situated somewhere in the pons, and the discharge of impulses from them, which is set up by decerebration, acts in such a way as to cause increase in the secretion of epinephrine and decrease in that of insulin, at the same time that dextrose secretory impulses are discharged to the liver.

Injection of Umbilical Vein in Retained Placenta.—Currie summarizes the procedure adopted in the Leeds Maternity Hospital for the conduct of the third stage of labor. Immediately after the delivery of the child, the patient is turned on her back and the cord is placed in a sterile dish between her thighs. The height of the fundus is noted, but the uterus is not touched unless undue loss of blood necessitates the use of gentle massage to induce a contraction. In most cases the patient is left undisturbed for twenty minutes, except that the height of the fundus is observed from time to time, also the presence of hemorrhage. In normal cases the simple tests for the position of the placenta are made (lengthening or shortening of the cord, the height of the fundus, and the shape, contour and mobility of the body of the uterus). If such tests reveal that the placenta is lying in the lower segment or vaginal vault, the fundus is massaged to elicit a contraction and the uterus is then used as a piston to push the placenta out of the vagina. If the tests show that the placenta has not left the uterus, they are repeated at intervals of five minutes. No alarm need be felt if the placenta is retained without hemorrhage, but should the placenta be retained and a postpartum hemorrhage occur this will continue until the placenta is removed. It was formerly the custom at the Leeds Maternity Hospital to attempt to express the placenta by means of Credé's maneuver, and should this be unsuccessful to repeat the maneuver at intervals and under an anesthetic if necessary before resorting to the dangerous manipulation of manual removal. Now injection of the umbilical vein is practiced. A Scannel blood transfusion apparatus is used. This consists of a 20 cc. syringe with a three-way tap and thus overcomes the delay made necessary by the repeated disconnection of the ordinary record syringe. The patient is placed comfortably in bed with the lower part of the abdomen and thighs exposed, the thighs at the same time being abducted. The vulva and the surrounding skin and the cord are thoroughly cleansed and the cord is placed on a sterile towel lying between the patient's legs. The needle is inserted into the umbilical vein about 6 inches (15 cm.) from the vulva, and held in position by a ligature. It is better to leave some undamaged cord between the needle and the vulva in case it is necessary to reinsert the needle. The injection of physiologic solution of sodium chloride is now commenced, and this is injected at the rate of from 300 to 400 cc. in two and a half minutes; 350 cc. is about the average amount of fluid used. On completion of the injection, artery forceps are placed on the cord, the needle is removed, and the placenta is expressed if it has not been already spontaneously delivered. As the fluid enters the placenta, the fundus of the uterus is felt to rise up in the abdomen and later strong uterine contractions occur. The author does not deem it necessary to await the spontaneous expulsion of the placenta but rather aids its delivery by immediate expression, during a contraction, after the completion of the injection. The method presents to the physician, whether of a clinic or in general practice, an easy means of obtaining completion of the third stage of labor, without the aid of any further instruments than he normally carries in his bag; without the necessity of much preparation or anesthetic, with a fair proportion of success, and above all without the great fear of puerperal infection and risk of death that accompany the manipulation now generally practiced; namely, "manual removal."

Serum Agglutinations to Typhoid Group of Organisms.—Seventy-three cases of pulmonary tuberculosis with a negative history of TAB inoculation or infection were examined by Madgwick and Partner for agglutinins to the typhoid group of organisms and these were found to be present in the blood of twenty-five, or 34.2 per cent. These twenty-five cases showed reactions of diagnostic significance, which persisted for three months during the course of the investigation. Control investigations of 100 cases of nontuberculous mental hospital patients showed slightly positive reactions in five cases only, one of which was possibly the result of prophylactic inoculation against the typhoid group of fevers during army service. The results suggest that, in a case showing persistent agglutination reactions of average low titer and not showing the rise of titer associated with the progress of true typhoid infections, the possibility of tuberculosis should not be overlooked.

Medical Journal of Australia, Sydney

1: 565-598 (April 23) 1932

Spirit of the Association. A. J. Gibson.—p. 565.
Certain Aspects of Acidosis. F. S. Hansman.—p. 570.
Midwifery in General Practice. L. May.—p. 575.

Bulletin Médical, Paris

46: 433-448 (June 18) 1932

Examination and Treatment of Backward Child. E. Apert.—p. 437.
Continuous Fever as Only Symptom in Acute Rheumatism. R. Lutembacher.—p. 439.
*Scintillating Scotoma in Diagnosis of Pulmonary Tuberculosis. P. Braunstein and J. Stephani.—p. 440.

Scintillating Scotoma in Diagnosis of Pulmonary Tuberculosis.—Braunstein and Stephani noted scintillating scotoma in 80 per cent of patients with pulmonary tuberculosis examined in an investigation covering several hundred cases. This type of scotoma manifests itself clinically in the form of an attack which starts with the appearance of a dark spot in front of both eyes. The spot extends accompanied by a vibratory motion, called scintillations, at its periphery and zigzag colored lines until there is a considerable visual defect, frequently of hemianopic form. Sometimes it is even accompanied by headache, malaise, vertigo, nausea and vomiting. The attack, which lasts from several minutes to a quarter of an hour, resists all treatment and finally ceases completely. While it cannot be considered a pathognomonic sign the authors think it should be placed among the list of classic general symptoms of pulmonary tuberculosis whether it occurs during the premonitory period or the early or the advanced stage of the disease. They think that it not only is a reliable sign of pulmonary tuberculosis but also has a certain prognostic value, as its presence and persistence during the course of the disease indicates, better than many other tests, a weakened resistance.

Presse Médicale, Paris

40: 925-940 (June 11) 1932

*Treatment of Alimentary Anaphylaxis by Liquid Petrolatum. C. Richet and R. Couder.—p. 925.
Pathogenic Agent of Typhus Fever. J. Ségal.—p. 926.

Treatment of Alimentary Anaphylaxis by Liquid Petrolatum.—Richet and Couder, on the basis of clinical experience, state that liquid petrolatum given in doses of one teaspoonful at the beginning and at the middle or end of each meal is capable of preventing anaphylactic disturbances in case of alimentary anaphylaxis. They report five cases: three of urticaria, of many months' duration, one of diarrhea of twenty years' standing and one of intense vertigo and abdominal pain of six months' duration in which the treatment with liquid petrolatum was effective within a few days. This method may be associated with other forms of antianaphylactic therapy, such as peptone therapy or elimination diet. In two cases the cure continued after the treatment was stopped. The authors thought at first that the oil acted as a semiprotective coating for the digestive mucosa which retarded the absorption of the anaphylactizing proteins, so that the organism had time at each meal to antianaphylactize itself. However, numerous experiments on guinea-pigs contradicted this explanation, so the mechanism of this therapy still remains obscure.

Schweizerische medizinische Wochenschrift, Basel

62: 553-572 (June 11) 1932

*Prophylaxis of Postoperative Venous Thrombosis. H. Iselin.—p. 553.
Functional Process in Nervous System. F. Verzár.—p. 556.
Therapeutic Use of Organic Gold Salts. K. Ziegler.—p. 560.

Prophylaxis of Postoperative Venous Thrombosis.—Iselin stresses the following rules as essential for the prevention of postoperative thrombosis: 1. Injury of the vascular epithelium should be avoided before, during and after operations. Endothelial injuries may result from intravenous administration of chemical substances and consequently these should be avoided. 2. The physiologic composition of the blood should be respected and consequently the intravenous injection of large amounts of sodium chloride solutions is inadvisable. To administer fluid to the blood the author considers the subcutaneous administration as better and he emphasizes the significance of isotonia. 3. In order to improve and accelerate the circulation, he recommends the application of remedies that effect hyperemization, such as warm mustard applications to the legs. These not only counteract stasis in the legs but also aid in drawing the blood away from the overfilled portal system after laparotomies, and from the lungs following inhalation anesthesia. They should be applied soon after the operation, in order to be effective during the postoperative circulatory crisis, which develops particularly in obese patients.

Archivio Italiano di Urologia, Bologna

8: 539-650 (May) 1932

*Strictures and Congenital Atresia of Urethra. G. Tarozzi and G. Bucciardi.—p. 539.
Study of Diuretic Cerebral Hormones by Puncture of Saline Center in Floor of Fourth Ventricle. E. Mingazzini.—p. 601.

Strictures and Congenital Atresia of Urethra.—Tarozzi and Bucciardi state that in complete congenital closure of the urethra there is also congenital dilatation of the bladder, whereas in stricture there is in addition to this dilatation a compensatory hypertrophy of the bladder wall. Two types of tumor come into question in urethral stricture; namely, fibromyoma of the bladder and the ganglioneuroma found in certain zones of nervous ganglial elements. Neoformations derived from blastomatous proliferation of nervous elements consist of neuroblastoma, paragangliomas and ganglioneuromas. In a number of the authors' cases, the stricture consisted of a hypertrophic and hyperplastic process involving all the muscular, connective tissue and nervous layers of the bladder and was accompanied by hypoplasia of the genital organs. In a few cases the presence of hyperplastic nervous tissue in the bladder militates against the fibromatous and fibromyomatous character of the bladder changes. When there is no closure but simply congenital stricture of the urethra, the resulting alterations through dilatation and hypertrophy of the bladder are already established during intra-uterine life and are more accentuated after birth. Congenital urethral strictures are either partial (valvular) or annular. Nothing is known of the causes and primary conditions by which a congenital stricture is determined. It occurs generally in males. Some hold that only those cases are congenital wherein the form of the utricle and the disposition of the glands of the verumontanum determine a true hyperplasia of the urethral crest, with production of a partial stricture corresponding to the internal urethral crifice. Others maintain that toxic and infectious processes in intra-uterine life, resulting in deformity and sclerosis, can easily determine stricture.

Boll. e Memoria d. Soc. Piemont. d. Chir., Biella

11: 519-564 (May 14) 1932

Arthroplasty of Knee. D. Bargellini.—p. 519.
Operation for Diverticulum of Duodenum at Duodenojejunal Angle. M. Donati.—p. 523.
*Gallstone of Rare Composition. O. Uffreduzzi.—p. 531.
Importance of Roentgen Examination in Some Cases of Calculosis of Choledochus. A. Foà.—p. 536.
Technic of Examination of Motor Function of Urinary Bladder. E. Ragnotti.—p. 545.
*Importance of Renal Function in Postoperative Insufficiency of Liver. L. Stropeni.—p. 554.

Gallstone of Rare Composition.—Uffreduzzi found in a patient a gallstone consisting almost completely of calcium carbonate. On reviewing the case literature of gallstones, he did not find anything similar to his case. He states that calcium frequently enters into the composition of biliary stones but only in combination with bilirubin or cholesterol or in compound stones. The mucosa of the cholecystic wall undoubtedly produces calcium but this cannot explain a pure calcium carbonate calculus.

Renal Function in Postoperative Insufficiency of Liver.—Stropeni states that insufficiency of the liver is objectively manifested above all by the appearance of ketone bodies in the urine (acetone, diacetic acid, beta-oxybutyric acid). He studied both the acetone content of the urine and the amount of ketone bodies in the blood. Normally the blood contains ketone bodies to the amount of from 13 to 25 mg. per hundred cubic centimeters. After an operation (usually for calculous cholecystitis) there is a slight increase in the ketone bodies corresponding to the amount of acetone in the urine. A slight and decreasing elimination of acetone corresponds to a progressive increase of ketone bodies in the blood. The determining cause of the coma in diabetes is not so much the increase in the production of ketone bodies as the appearance of a renal insufficiency permitting the ketone bodies to accumulate in the blood. In regard to ketone bodies, the kidneys are divided into three groups: (1) normal kidneys with great reserve power; (2) kidneys apparently normal but having slight reserve (could be called "compensated kidneys"), and (3) kidneys without reserve power with already altered func-

tion; namely, "decompensated kidneys." Insulin is the specific remedy for ketonemia in decompensation of the kidneys, but if not used at once it cannot save the kidney from irremediable alteration. The behavior of renal function observed in respect to the elimination of nitrogen corresponds perfectly to that of the kidneys in the presence of toxic substances such as ketones. The author concludes that the cause of every accident in cases of postoperative functional insufficiency of the liver can be traced to the kidneys.

Archivos de Medicina, Cirugía y Espec., Madrid

35: 429-448 (May 28) 1932

*Inflammatory Strictures of Rectum. M. Corachán.—p. 429.

Inflammatory Strictures of Rectum.—From observations made in eighteen patients with inflammatory strictures of the rectum (five men and thirteen women), Corachán concludes that the strictures are consecutive to inflammatory changes in the lymph nodes of the pararectal tissues. The changes in the lymph nodes originate in a primary infection, either genital or anorectal, which in most cases is of the nature of lymphogranulomatosis. Rectitis, which represents the initial stage of development of the inflammatory strictures, is caused by the lymphatic stasis plus a retrogressive infection, provoked by the adenopathy of the lymph nodes and propagated through the lymph chanels. The perianorectal suppuration is caused by septic foci in the regional lymph nodes. Patients with inflammatory strictures of the rectum usually consult the surgeon too late, when the disease is in an advanced stage. As the only treatment of inflammatory strictures of the rectum, the formation of a permanent artificial anus, which the patient can operate at will, seems advisable. When the disease is not yet in an advanced stage and also when the patients do not improve after the formation of an artificial anus, the removal of the distal segment of the sigmoid portion of the colon (which remains after the artificial anus is made) gives satisfactory results. However, if the sigmoid flexure is not included in the pathologic process, its resection is unnecessary. The technic of the operation is simple and the mortality is low.

Semana Médica, Buenos Aires

39: 1505-1572 (May 19) 1932. Partial Index

*Polyneuritis Caused by Triorthocresyl Phosphate Poisoniag. R. Carrillo and J. W. G. Ter Braak.—p. 1511.
Postoperative Pharyngeal Dysesthesia. E. Riccitelli and Y. Franchini.—p. 1547.
Undulant Fever in Argentina. E. A. Molinelli.—p. 1550.
Induction of Labor by Hypophysin. H. F. Adamo.—p. 1553.
Heredosyphilitic Polydactylism: Case. A. E. Despontin.—p. 1555.
Juvenile Tabes: Case. I. Maldonado Allende.—p. 1559.

Polyneuritis Caused by Triorthocresyl Phosphate Poisoning.—From clinical observations made in thirty-seven young women with toxic polyneuritis following the use of apiol as an abortifacient, and also from an anatomic and experimental study of this type of polyneuritis, Carrillo and Ter Braak conclude that the disease manifests itself, after a period of incubation of seventeen days, by sudden development of paralysis of the distal segments of the limbs associated with atrophy of the hands and the feet, disappearance of the achilles tendon reflex, with conservation of the patellar reflex, and absence of disturbances of sensation. The close similarity of the toxic apiol polyneuritis with two other types of toxic polyneuritis (polyneuritis caused by creosote phosphate in the treatment of tuberculosis and the so-called ginger paralysis described in the United States in 1930) made it advisable to classify the three forms of polyneuritis mentioned as included in only one nosologic group. The causal agent in all three forms is triorthocresyl phosphate (which is present in both the ginger extract and in the commercial preparations of creosote phosphate, and apiol). The authors succeeded in reproducing "polyneuritis gallinarum" in a group of chickens after feeding the animals with apiol, obtained from the patients. Paralysis affects the territory supplied by the sciatic nerve. Study of the animals showed that the disease causes great pathologic changes in the muscles, nerves, the genitalia and the liver. The paralyzed territory presents an intense muscular atrophy. The alterations of the nerve fibers, which are of a periaxial and not of a wallerian type, involve selectively the myelin sheath. There are proliferations of the sheath of Schwann and structural alterations of the neuraxis. The changes in the spinal cord are secondary. The poison seems to have a selective action of fixation on the phospholipids and on the distal parts of the nerves, thus causing a direct degeneration of the muscles and, in grave cases, a retrogressive degeneration in the spinal cord. The clinical picture of apiol polyneuritis is dissimilar to the clinical pictures presented by other types of toxic polyneuritis previously reported. It presents only a slight similarity to that of pure phosphorus polyneuritis (caused by phosphorus or its compounds). Patients with both slight paralysis and slight atrophy improve rapidly. When the condition causes great atrophy and intense impotence of the muscles resulting in marked paralysis, the return to normality is slow (between two and three years).

Archiv für klinische Chirurgie, Berlin

170: 331-510 (May 23) 1932

Skeletal Metastases in Hypernephroma. W. Lehmann.—p. 331.
Experimental Investigations on Pathology of Suprarenals. H. Widenhorn.—p. 381.
*Disturbances of Consolidation Following Orthopedic Osteotomies of Long Bones. M. Brandes.—p. 408.
Resection of Ulcerated Stomach in Infrapapillary Duodenal Stenosis. A. Plenk.—p. 427.
Gastric Phlegmon. H. Nahrath.—p. 431.
Double Ulcer of Duodenum: Pathology of Duodenal Ulcer. O. Bsteh.—p. 444.
Development and Significance of Synovial Villi. O. Siber.—p. 458.
*So-Called Hyaline Thrombosis in Profuse Renal Hemorrhage. D. Schwarz.—p. 470.
Malacia of Os Lunatum in Electrical Trauma. W. Wagner.—p. 483.
Surgical Treatment of Pancreatic Cysts. H. Neuffer.—p. 488.
Clinical and Surgical Significance of Outgrowths on Vesical Mucous Membrane Following Tuberculosis. T. Cohn.—p. 493.
Multiple Carcinomas. J. Körbler.—p. 505.
Method for Subcutaneous Division of Plantar Aponeurosis. A. S. Tokmakow.—p. 508.

Disturbances of Consolidation Following Orthopedic Osteotomies of Long Bones.—Observations on 621 orthopedic open osteotomies revealed to Brandes the following: 1. In 1.2 per cent of the cases there were disturbances in the healing process, but a pseudo-arthrosis developed in only one instance. 2. The disturbances in the consolidation were caused by various local changes, such as by a disturbance in the callus formation due to a second surgical intervention at the site of the osteotomy, by bolting of the medullary cavities of the bones of the forearm, by a wire suture of the humerus and by a slight infection of a hematoma on the tibia. In two patients with severely sclerosed old rachitic bones, the consolidation was considerably retarded, and in one instance of Springer's operation the resorption of the wedge led to pseudo-arthrosis. 3. In one case there was no local cause but a gravidity prevented the callus formation. 4. The assumption that not the operative procedures, but rather endocrine disorders are the cause of the retardation in the consolidation, was not confirmed by the author's observations. 5. After osteoclasis he never noted complications or retardation in the healing process. The osteotomy disturbances were most frequent in the leg; dominance of one sex was not noticeable. 6. In the correction of deformities, it should be the aim to obtain results with the smallest intervention.

So-Called Hyaline Thrombosis in Profuse Renal Hemorrhage.—Schwarz relates the clinical history of a patient, aged 24, in whom on account of life endangering hematuria, chills and severe, colic-like pains in the region of the right kidney, a nephrectomy was done. The microscopic examination revealed a localized thrombosis of the interlobular vessels and of their branches with hyaline fibrin. Subcapsularly, in the region in which the largest number of vessels were thrombosed, there was a wedge-shaped hemorrhagic infarct and several smaller, older infarcts. Where the vessels were not obliterated with the hyaline fibrin, they contained besides fibrin also erythrocytes. The same formations were found in the uriniferous tubules, especially in the junctional tubules and in the collecting tubules. The cause of the formation of this hyaline fibrin remains unexplained, but the author assumes that the erythrocytes participate in its formation and that the casts in the uriniferous tubules may also be formed from fibrin, for morphologically as well as in their staining characteristics the casts are like the thrombi in the vessels.

Dermatologische Zeitschrift, Berlin

64: 1-126 (June) 1932. Partial Index

*Does the Pathogenic Agent of Syphilis Have Other Forms or Stages of Manifestation Besides Spirochetes? F. Jahnel, R. Prigge and M. Rothermundt.—p. 7.
Peculiar Venous Changes in Experimental Frambesia of Rabbits. E. Hoffmann.—p. 29.
*Gumma of Thyroid: Differential Diagnosis of Gumma and Tuberculous Granulation Tissues. P. Fasal.—p. 43.
Tertiary Syphilitic Superficial Cutaneous Infiltrates. Ruth Lindemann. —p. 51.
*Statistics on Lichen Ruber. H. Freund.—p. 57.

Does the Pathogenic Agent of Syphilis Have Other Forms or Stages of Manifestations Besides Spirochetes?—Jahnel and his associates point out that soon after the discovery of Spirochaeta pallida the question arose whether, besides the spiral form, there are yet other forms or stages of the pathogenic agent of syphilis. After reviewing the theories, the authors describe their studies on this problem. They reach the conclusion that although the syphilitic organism can occasionally be demonstrated by vaccination when the microscopic examination does not reveal the spirochetes, this does not justify the assumption that the syphilitic organism is not present in the spirochete form and must therefore be present in the ultravisible form. They believe that the cause of the frequent failures of the microscopic demonstration of the spirochetes is their small number, for they observed that the direct microscopic demonstration fails in blood suspensions in which the spirochete content is below a certain limit; nevertheless by means of these suspensions it is possible to produce a typical infection. They found that if the number of syphilitic microorganisms is less than 300 per cubic millimeter it is no longer possible to detect them in the dark field. As another factor against the existence of an ultravisible form of the syphilis virus they cite the negative results of filtration experiments.

Gumma of Thyroid.—According to Fasal, syphilis of the thyroid, although comparatively rare, may occur during secondary as well as tertiary syphilis. The rarity of syphilitic involvement has been explained on the basis of the iodine content of the thyroid, the iodine protecting the healthy gland against syphilis, whereas the thyroid with impaired function lacks resistance against syphilis. Histologically verified cases of syphilis of the thyroid during the secondary stage are extremely rare. Clinically, the gumma of the thyroid usually presents the aspects of a rapidly growing tumor, which is often sensitive to pressure, which by compression of the trachea and of the esophagus may cause dyspnea and difficulty in swallowing, and which is frequently taken for a malignant struma. However, the literature contains reports also of cases of gumma of the thyroid in which the diagnosis of syphilis was based only on the positive serologic reactions and on the effectiveness of the antisyphilitic therapy. But the author shows that the diagnosis of syphilis of the thyroid is not always justified in cases in which a struma disappears following antisyphilitic treatment, for it has been known that a struma that already existed before the syphilitic infection was influenced by antisyphilitic treatment. Histologically, because of the abundance of giant cells and the frequently pronounced caseation, there is a considerable resemblance to tuberculous granulation tissues. The author describes a case which had several times been diagnosed as malignant struma. However, the positive syphilitic seroreactions and the rapid improvement following antisyphilitic treatment indicated syphilis. Yet this diagnosis could have been made also on the basis of the histologic examination. In discussing the histologic examination, the author mentions and evaluates the various stains and he stresses that the Bielschowsky-Maresch method of impregnation with silver is especially valuable. When this method is employed the gumma always presents a rich meshwork of fresh, fine tissue fibrils without connection with the former stroma, whereas the tuberculous caseation presents only rests of old tissue fibrils.

Statistics on Lichen Ruber.—A statistical review of 1,124 cases of lichen ruber, which were observed during the years from 1914 to 1930, convinced Freund that the incidence of lichen ruber is 20 per cent higher among men than among women. With increasing age the incidence of lichen ruber increases, and it is highest in persons aged between 50 and 60. Seasonal fluctuations were not observed.

Deutsche Zeitschrift für Chirurgie, Berlin

236: 97-168 (May 17) 1932

*Measurement of Skin Temperature During Anesthesia and Its Significance for Prognosis. E. Mayer.—p. 97.
Disturbances of Carbohydrate and of Acid-Base Metabolisms as Well as of Gas Exchange in "Avertin" Anesthesia: Their Modification by Oxygen and Carbon Dioxide Inhalation. H. Fuss and E. Derra.—p. 114.
*Pancreatitis Following Surgical Interventions on Biliary System. H. L. Popper.—p. 124.
Bacteriology and Therapy of Pneumococcic Peritonitis. T. Eck and M. Gundel.—p. 137.
Retrograde Pyelography. W. Roller.—p. 147.
Free Perforation of Pyonephrosis into Abdominal Cavity. H. Hammel. —p. 155.
Implantation of Bone (Axhausen's Method) for Treatment of Pseudo-Arthrosis of Bones. T. Mayeda.—p. 159.

Measurement of Skin Temperature During Anesthesia.—Induced by the studies of Ipsen and Foged, who had found that the skin temperature during operations gives indications for the postoperative course, Mayer studied this problem on 196 patients. He found that normally anesthesia increases the skin temperature and that this is most clearly noticeable on the sole of the foot. The increase is due to a dilatation of the cutaneous arteries, especially of the arterioles. Under the influence of ether-oxygen anesthesia, which in some instances was deepened by the administration of a few drops of chloroform, the skin temperature increased on the average by about 5 degrees centigrade. In combined "avertin" and nitrous oxide-oxygen anesthesia, the skin temperature likewise increases by about 5 degrees centigrade. The increase is more rapid than in ether anesthesia. In spinal anesthesia the temperature increase follows immediately after the injection of the anesthetic. Under the influence of local anesthesia, there is as a rule no temperature increase, only occasionally increases from 4 to 6 degrees centigrade being noted. In regard to the prognostic significance of the skin temperature during anesthesia, the author states that an increase (positive Ipsen's anesthesia phenomenon) indicates a favorable prognosis. Deviations from the normal anesthesia reaction (negative Ipsen's anesthesia phenomenon) indicate an unfavorable prognosis.

Pancreatitis Following Operations on Biliary System.—It is pointed out by Popper that the pancreatitis which develops following interventions on the biliary system becomes manifest under various symptoms, none of which are sufficiently characteristic to permit a definite diagnosis. However, with the aid of systematic tests of the diastase content of the blood, it is possible to demonstrate a postoperative disturbance of the pancreas. Since the diastase values return to normal after a certain time, blood sugar tests should be made in order to determine the further course of the disease of the pancreas. If a pancreatic disorder exists, dietary as well as medicinal measures should be resorted to. Insulin should be given, but epinephrine and other medicaments that have a tendency to increase the blood sugar content should be avoided. Continuous drop infusion with sugar solutions is likewise inadvisable. The fact that, of five cases with postoperative pancreatitis, four had a fatal outcome indicates an unfavorable prognosis.

236: 169-268 (May 22) 1932

Autoplastic and Homoplastic Implantation of Epidermis. Loeffler.—p. 169.
*Osteitis Fibrosa and Sarcoma. W. Hoffmeister.—p. 191.
Criticism of Usual Methods of Surgical Reposition of Bone Fractures. H. May.—p. 213.
Surgical Treatment of Bone Fractures. E. W. Lexer.—p. 234.
Intravenous Pyelography. W. Hoffmeister.—p. 248.
Surgical Approach in Operations on Temporomaxillary Articulation and on Upper Portion of Ascending Ramus of Maxilla. G. Schmidt.—p. 260.

Osteitis Fibrosa and Sarcoma.—It is pointed out by Hoffmeister that in the treatment of osteitis fibrosa it is of greatest significance to consider whether an osteitis fibrosa may develop into a sarcoma, or whether the brown tumors belong in the group of sarcomas. By means of several case reports the author illustrates that the diagnosis osteitis fibrosa has to be made with great caution, for beginning sarcomas may, by changes in their surroundings, simulate osteitis fibrosa. The arrangement of the giant cells does not permit a differentiation between osteitis fibrosa and sarcoma. Roentgen and histologic examinations alone are not decisive. As long as there is no reliable method for the differentiation between malignant and

benign changes in the bones, definite rules should be laid down for the surgical treatment. The osteitis fibrosa cystica heals most readily if all the diseased tissue is removed. Moreover, the complete removal of all diseased tissues prevents degeneration into a sarcoma. The following rules should be adhered to in the treatment of osteitis fibrosa, or of a beginning bone disease that resembles osteitis fibrosa: Small cysts should be chiseled out,, down into the healthy tissue, and larger cysts should be resected and the resulting defect should be bridged by bone transplantation. If the process is an osteitis fibrosa without sarcomatous degeneration, the subperiosteal extirpation prevents relapse. On the other hand, if there is a sarcoma, the early resection provides the most favorable chances for recovery. The subperiosteal resection has no maiming effect, because the perisoteum regenerates the bone again. The resection can be employed also when the tumor has perforated the bone but has not yet affected the soft parts. If the operation reveals a perforation into the soft parts, the diagnosis sarcoma is established; and only in this case is a maiming operation, such as amputation or exarticulation, justified.

Klinische Wochenschrift, Berlin

11: 929-968 (May 28) 1932

Problem of Dementia. H. W. Gruhle.—p. 929.
*Studies on Postoperative Condition. W. Ewig and L. Klotz.—p. 932.
Determination of Antiprothrombin in Blood Serum. A. Fischer.—p. 936.
Observations on Normal Histology of Brain of Children, with Especial Consideration of Anatomic Changes in Brain of Children with Intestinal Intoxication (Exsiccosis). J. H. Globus, H. Schwarz and P. Gooler.—p. 937.
Hyperfunction of Parathyroids and Recklinghausen's Bone Disease. E. Toenniessen and H. von Hecker.—p. 940.
Increase in Skin Wheals of Coloring Matter Circulating in Blood. D. Adlersberg and A. Perutz.—p. 942.
Cause of Change in Form of Automatic Ventricular Complexes in Complete Heart Block. D. Scherf and A. Schott.—p. 945.
Red Rays for Treatment of Profuse Genital Hemorrhages. H. Küstner.—p. 947.
Roentgen Picture of Skull in Increased Cerebral Pressure. I. Roth and R. Lemke.—p. 949.
Acholuria Resulting from Renal Insufficiency in Patients with Icterus. G. Perémy.—p. 950.
Determination of Urea in Normal and Pathologic Eye Lenses of Animals. S. Nauen.—p. 952.

Studies on Postoperative Condition.—Ewig and Klotz, wishing to throw more light on the component factors of postoperative shock, made animal experiments with procedures that are also employed in studies on human subjects. They found that the four conditions that they selected for their studies, namely, central vasomotor paralysis, wound shock, intestinal shock and histamine shock, are conditions of true collapse. However, the pathogenesis of these conditions varies considerably, and consequently their treatment has to be different. The decrease in the amount of the circulating blood, the authors consider the cardinal symptom of collapse. In central nervous collapse it is due to the fact that large quantities of blood are retained in the periphery, but there also develop peculiar changes in the composition of the blood, which in the larger vessels lead to a considerable increase in the plasma, so that the hemoglobin and erythrocyte values decrease considerably. In the peripheral capillary blood, the conditions are reversed. In wound shock and intestinal shock, the decrease in the amount of the circulating blood is primarily due to loss of plasma, so that there is a considerable inspissation of the blood. Since the loss of plasma is mainly due to the escape of plasma in the injured vascular regions, local tissue changes at first predominate in these types of shock. In histamine shock, however, the conditions are more complicated, but they become likewise manifest in a considerable loss of plasma with the resulting inspissation of the blood. In histamine shock in dogs the liver as a storage organ plays an important part, not only in the sense of a filling with blood but also as a result of capillary endothelial injury by escape of plasma into the parenchyma. The latter process, however, involves several other organs. In addition to this there is also a loss of fluid in the stomach and intestine. In the central nervous shock, however, as well as in wound shock and in intestinal shock, a storage function of liver and spleen is not likely. Helpful for the clinical differentiation of various forms of collapse is not only the determination of the amount of the circulating blood, by either the dyestuff or the carbon dioxide methods, but also the determination of its hemoglobin content. Decrease in the amount of circulating blood, with considerable differences in the two methods of determination and decrease of hemoglobin content in arterial and venous blood, indicate central nervous collapse; but if the two test methods of the circulating quantity of blood give similar results and if in addition to this the blood is inspissated, the collapse is of peripheral origin.

11: 969-1008 (June 4) 1932

Physiology of Hypophysis with Relation to Its Diseases. T. J. Putnam.—p. 969.
Periodic Irregularities in Pulse During Abnormal (Cheyne-Stokes) and Normal Respiration. H. von Hoesslin.—p. 971.
*Treatment of Pernicious Anemia with Liver and Liver Extracts. F. Schlumm.—p. 975.
Point of Attack of Carbohydrates in Their Antiketogenic Action. A. Gottschalk.—p. 978.
Epileptic Attack and Neuromuscular Irritability. H. Altenburger and H. G. Wolff.—p. 980.
Treatment of Anemias by Means of Copper: Method for Quantitative Comparison of Antianemic Remedies and New Copper-Iron-Protein Preparation. H. Handovsky.—p. 981.
Behavior of Blood Sugar During Starvation. B. Slotopolsky.—p. 984.
*Accelerating Action of Parathyroid Hormone on Coagulation. G. F. Bume and E. Werber.—p. 988.
Magnesium Content of Blood, Particularly in Tetany. B. Sjollema and L. Seekles.—p. 989.
Nature and Biologic Action of Complex Salts of Alkaline Earth Metals. K. Mulli and F. Standenath.—p. 990.
Treatment of Benign Lymphogranuloma Inguinale. C. T. Nicolau.—p. 991.

Treatment of Pernicious Anemia with Liver and Liver Extracts.—Schlumm thinks that the advantages of parenteral liver therapy far outnumber its disadvantages and that it is superior to enteral therapy. He also suggests that cases that do not yield to enteral liver treatment may yet be saved by parenteral therapy. In comparing several liver extracts that have been used for injection he found that deproteinization reduces the efficacy of the extract considerably. The fact that comparatively small amounts of parenterally administered liver are just as effective as large amounts of enterally administered liver indicates that only a small quantity of the active principle passes the intestinal wall unchanged. This in turn speaks for a hormonal character of the active principle and against the theory that the liver becomes active by absorbing toxins. If the active substance really is hormonal the deficiency theory of pernicious anemia seems more probable, the more so because pernicious anemia seems to be related to other deficiency diseases, such as sprue, beriberi and pellagra.

Accelerating Action of Parathyroid Hormone on Coagulation.—Following investigations, Bume and Werber became convinced that, besides increasing the calcium content of the blood, the parathyroid hormone also effects an increase in the thrombokinase; they think that to this influence on the thrombokinase can be ascribed the superiority of the parathyroid hormone over calcium therapy in the treatment of hemoptysis.

Medizinische Klinik, Berlin

28: 777-812 (June 3) 1932

Clinical Significance of Research on Dysentery. Sartorius.—p. 777.
*Connection Between Rhinopathia Vasomotoria and Digestive Disturbances. D. Adlersberg and L. Forschner.—p. 779.
Essential and Symptomatic Agranulocytosis. E. Schilling.—p. 784.
Ovarian Tumors and Ovariotomy During Pregnancy. F. Schrenk.—p. 785.
Determination of Blood Groups in Paternity Lawsuits. A. M. Marx.—p. 787.
Percutaneous Arsenic Action with Arsenic Baths in Secondary Anemias. H. Frank.—p. 791.
Significance of Stasis Treatment in Surgery. E. Sehrt.—p. 792.
Whooping Cough a Disease Entity or Only a Symptom? W. Hildebrandt.—p. 793.
Thyrogenic Obesity as Result of Gunshot Wound of Neck? O. Oesterlen.—p. 795.

Rhinopathia Vasomotoria and Digestive Disturbances.—Adlersberg and Forschner show that the etiology of rhinopathia vasomotoria is not always the same. In the majority of cases it is of allergic origin, in a second group it is enterogenic, and the third form is closely connected with the internal secretions. In this paper the enterogenic form is discussed primarily. In a large rhinologic material the concurrence of typical rhinopathia vasomotoria with gastro-intestinal disturbances was observed in thirty-six patients. On the other hand, among a large number of patients with gastro-intestinal disorders, thirty-three were discovered in whom there also existed a rhinopathia vasomotoria. The enterogenic form of rhinopathia

vasomotoria usually shows the following characteristics: (1) simultaneous existence of typical gastro-intestinal symptoms (usually chronic enteritis or colitis), (2) modification of nasal disorders by treatment of gastro-intestinal disturbances, and (3) absence of allergic symptoms (especially absence of eosinophilia in blood and tissues). The authors call attention to connections between rhinopathia vasomotoria and oxyuriasis, and to relations with incretory processes as well as to the influence of the intestine on the allergic form of rhinopathia vasomotoria.

Münchener medizinische Wochenschrift, Munich

79: 861-900 (May 27) 1932

*Therapy of Effusions and Vascular Disturbances in Extremities. F. Schede and E. Bettmann.—p. 861.
Treatment of Cystitis and of Acute and Chronic Cystopyelitis. Schottmüller.—p. 863.
Blood Pressure and Bronchial Asthma. M. J. Gutmann.—p. 864.
*Dietary Alteration in Infectious Diseases. K. Friedrich.—p. 866.
Therapy of Secondary Anemias in Nurslings and Small Children. Gertrude Redmann.—p. 868.
Gonorrheal Arthritis in Small Girls. H. Stephani.—p. 869.
Results of Immunization with Concentrated Diphtheria Ointment According to Löwenstein.—p. 871.
Injuries of Fetus Caused by Chemical Contraceptives. G. Schwarz.—p. 872.
Dermatitis Bullosa Caused by Plant Poison. L. Haymann.—p. 874.

Therapy of Effusions and Vascular Disturbances in Extremities.—Schede and Bettman point out that circulatory disturbances of the extremities and chronic effusions of the knee joint are frequently refractory to treatment, particularly when the causes are not known. Yet it is important to remove the effusion before a flail knee or an arthrosis deformans develops; and chronic circulatory disturbances of the leg should at least be improved to such an extent that chronic indurations, ulcers and thrombophlebitic changes are avoided. The authors describe methods of mechanical treatment that are helpful in realizing these aims. The impaired circulation can be improved by rhythmic opening and closing of the arterial blood stream, by means of vascular massage or compression. Vascular massage is done by alternately inflating and deflating a rubber tube that is put around the thigh. This treatment influences not only the limited region but the entire peripheral vascular system. On the same principle of rhythmic compression are based the inflatable rubber stocking and the inflatable abdominal bandage, and they are used for the same purpose, namely, that of stimulating the circulation or, in the case of the abdominal bandage, for improving the thoracic respiration in patients with spondylosis. In addition to the vascular massage the authors recommend gymnastic exercises, hydrotherapeutic measures and medicinal treatments. In discussing gymnastics they mention bicycle exercises, various forms of knee bending, and turning in bed without using the arms. Hydrotherapeutic measures aim to improve the circulation by thermic stimulation, such by cold showers applied from the toes upward to the waist; also by alternating hot and cold foot baths and by subaqual massage. For the medicinal treatment the authors recommend measures that dilate the capillaries and the arteries.

Dietary Alteration in Infectious Diseases.—Friedrich shows that, by a sudden change in the diet, reactions may be produced in the course of infectious diseases, which, in persons with slight fever become manifest in a primary (not always recognizable) increase in temperature with subsequent decrease or only in a temporary decrease. The direction of the dietary change whether from acid to alkaline or in the reverse direction seems to be of slight significance; not the type but the suddenness and intensity of change is the decisive factor. Whereas the reactions that are produced by changes in the diet are almost the same in the various types of diet, the prolongation of a one-sided diet produces a characteristic action such as an increase in temperature by a diet inducing acidity, a decrease by a diet inducing alkalinity. Regular repetition of a change in diet in definite intervals is capable of influencing the course of infectious disease favorably, in that it has a defervescent effect. In patients with slight fever the author noted a favorable influence when the diet was changed after intervals of from one to two days. Less frequent changes were less effective. In patients with high fever the change should, if possible, be still more rapid. The author considers the change of diet as a promising method to influence patients with infectious and other diseases.

Zeitschrift für Tuberkulose, Leipzig

64: 399-478 (May) 1932

Robert Koch and Crusade Against Tuberculosis. F. A. Weber.—p. 399.
Beginning of Tuberculosis in Adults: Observations on Series of Roentgenograms. H. Braeuning.—p. 416.
Permanent Cure and Operability Following Thoracoplasty. A. Heymer and W. Thaler.—p. 427.
Cavern Formation in Lung in Atypical Pulmonary and Osseous Lymphogranulomatosis. H. Lichtenstein.—p. 429.
*Influence of Extirpation of Spleen and of Blockage of Reticulo-Endothelial System on Course of Tuberculosis. I. M. Subin.—p. 436.
Experiences with Complement Fixation Reaction According to Neuberg-Klopstock. W. Hünigen.—p. 447.

Extirpation of Spleen and Blockage of Reticulo-Endothelial System in Experimental Tuberculosis.—Owing to the fact that administration of spleen preparations have proved of favorable influence on tuberculosis in guinea-pigs, and because the action mechanism of this spleen therapy has not been understood as yet, Subin decided to approach the problem of the rôle of the spleen in tuberculosis from a different angle, namely, by subjecting tuberculous rabbits to splenectomy, and also by blockage of the reticulo-endothelial system with colloidal dyestuffs. It was found that splenectomy has an unfavorable influence on the course of tuberculosis, for the rabbits subjected to it showed more extensive tuberculous processes of a primarily exudative character than those that were not splenectomized. However, the blockage of the reticulo-endothelial system had the opposite effect of what was expected in view of the effect of the splenectomy, for in splenectomized animals in which the reticulo-endothelial system was blocked for a prolonged period the tuberculous lesions were much less severe than in the animals in which only splenectomy was performed. The author thinks that this favorable effect of blockage is due to the fact that it does not injure the reticulo-endothelial system but, on the contrary, that the dye-stuff has a stimulating effect.

Zentralblatt für Chirurgie, Leipzig

59: 1409-1456 (June 4) 1932

Historical Data on the Author of the "Fieldbook of Wound Medicine" of 1517. K. Sudhoff.—p. 1410.
*Treatment of Intestinal Paresis by Means of Infusions of Hypertonic Solutions of Sodium Chloride. W. Keusenhoff.—p. 1411.
Observations on Urethrovenous Passage of Contrast Medium in Urethrography. A. Hendriock.—p. 1415.
Perforated Liver Cyst Simulating Perforated Gastric Ulcer. W. Rieder.—p. 1423.
Treatment of Acromioclavicular Dislocation. H. Mannheim.—p. 1424.
Technic of and Indications for Nitrous Oxide-Oxygen Anesthesia. R. Goldhahn.—p. 1426.
Unusual Uterine Hemorrhages and Their Prevention. H. Walawelski.—p. 1429.
Rupture of Axillary Artery in Shoulder Luxation. H. Schirmer.—p. 1433.

Treatment of Intestinal Paresis by Means of Infusions of Hypertonic Sodium Chloride Solutions.—Keusenhoff considers as particularly valuable a method that has been recommended by French authors, who were able to counteract postoperative paralytic ileus by intravenous injection of 15 cc. of a 20 per cent solution of sodium chloride. The infusion not only effects a contraction of the smooth muscles but also aids in the elimination of the toxic substances that have accumulated in the tissues. The author employed this method in a number of cases of intestinal paresis that developed following laparotomy. When after thirty-six hours the usual procedures do not succeed in stimulating the inactive intestine, from 10 to 20 cc. of a 10 per cent solution of sodium chloride is injected. Care should be taken that the injection is not made paravenously, which would lead to painful infiltration. In mild cases the effect is usually prompt; if it is retarded, from 125 to 150 cc. of a 20 per cent solution of sodium chloride is given by rectum. The treatment with sodium chloride solution also proved helpful in ileus-like conditions that develop in diseases of the uropoietic system. He illustrates this with two case reports. In cases of intestinal paresis that have an organic cause, the described treatment is of course without effect; in instances in which the diagnosis is uncertain, it is advisable to give the injection of the hypertonic sodium chloride solution only in the clinic, so that no time is lost if a surgical intervention becomes necessary.

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Zentralblatt für Gynäkologie, Leipzig

56: 1377-1440 (June 4) 1932

*Erythrocyte Sedimentation Speed and Leukocytes. F. Heimann.—p. 1378.
Roentgenologic Control of Madlener's Sterilization. H. Wolf.—p. 1383.
Problem of Cesarean Section. E. Preissecker.—p. 1387.
Obstetric Significance of Congenital Tumors of Sacrum. W. Spitzer. ——p. 1403.
*Conservation of Genital Function Following Irradiation for Uterine Carcinoma. E. Philipp.—p. 1409.
Use of Dactyloscopy for Identification of Infants in Obstetric Clinics. B. Bergglas.—p. 1412.
Experimental Studies on Missed Abortion. W. K. Tschaikowsky.—p. 1414.

Erythrocyte Sedimentation Speed and Leukocytes.—Heimann thinks that it is now a matter of course to determine in clinical patients not only the erythrocyte sedimentation speed but also the leukocyte picture. After mentioning the numerous factors that have to be considered in determining the sedimentation speed of erythrocytes, he discusses the leukocytic hemogram and the number of leukocytes. He emphasizes that in sedimentation as well as in the leukocytic hemogram a single examination is not sufficient but that the tests have to be repeated from time to time. The sedimentation and the leukocytic blood picture frequently show in the beginning a contradictory behavior; for instance, the sedimentation is rapid and thus characteristic for an acute inflammation, whereas the leukocyte count, which in an acute inflammation would be expected to be high, is extraordinarily low. This observation induced the author to watch for it in his studies on fifty patients with gynecologic disorders. He describes only a few of the cases examined, but these indicate what he observed in the large number; namely, that the sedimentation speed, the number of leukocytes and the leukocytic hemogram, when they are studied alone, give only an unclear picture of the processes in the organism and are not an entirely reliable basis for the prognosis. However, the comparison of the three tests gives valuable information about the prognosis, or whether an operative intervention is necessary or not.

Conservation of Genital Function Following Irradiation for Uterine Carcinoma.—It is pointed out by Philipp that irradiation of genital carcinomas usually results in functional exclusion of the ovaries and of the uterus. This applies to roentgen rays as well as to radium rays. In the case of roentgen rays this is understandable since the carcinoma dose is several times as large as the castration dose, but this is not equally true of radium, since the effective rays of radium are less far-reaching; but even here the dose that heals the carcinoma is generally sufficient to exclude the ovarian function, for nearly all patients who were treated with radium became amenorrheal and remained so. Patients in whom menstruation persists following radium irradiation are exceptions. Among 250 women with genital carcinoma who were cured by irradiation, there were only two who subsequently became pregnant and in two others menstruation persisted. In trying to explain this conservation of function, the author points out that it may be due to the fact that the ovaries were too far away from the radium so that its rays were not sufficiently strong to impair the function, or the dosage may be of influence.

Sovetskiy Vestnik Oftalmologii, Moscow

1: 121-173, 1932. Partial Index

*Experimental Study of Cataract. A. M. Rodigin.—p. 121.
Accidents to Eye While Working with Emery Stone. D. A. Sivtsev.—p. 141.
Light Filters in Protecting Eyes During Electrowelding. A. F. Tomilova.—p. 144.
Pathologic Anatomy of Bandform Degeneration of Cornea. N. I. Shikhinashvili.—p. 147.
Prismoptometry for Recognition of Simulated Weakness of Vision. N. I. Bogoroditskiy.——p. 151.
Cysticercus in Region of Macula Lutea. L. B. Amstislevskiy.—p. 154.
Sapejko-van Millingen's Operation for Trichiasis. R. S. Rameev.—p. 158.
Lagley's Operation for Trachomatous Entropion. K. I. Khavanskiy.—p. 159.

Experimental Study of Cataract.—Using rabbits as experimental animals, Rodigin studied the composition, cytology, proteolytic and amylolytic ferments and the histology of the aqueous humor of the anterior chamber of a normal eye and an eye with experimental cataract. His conclusions are as follows: During the resolution of cataracts experimentally produced by intracapsular injection of 8 per cent solution of magnesium chloride, there is a change in the morphology of the aqueous humor with a predominance of lymphocytes and phagocytosis with inclusion of masses of the crystalline lens. When the absorbing process ceases, the morphologic picture of the aqueous humor becomes almost normal. Besides the morphologic changes there is also an increase in the proteolytic and amylolytic ferments. Under normal conditions the aqueous humor possesses an index of 8.3 for protease at 14 C. and 12.5 for protease at 38 C. and an index of 20 for diastase; whereas, in the presence of a swelling and a resolving cataract, both ferments increase and the index becomes 50 for protease and 80 for diastase. Stabilization of the cataract leads to a decrease in ferments with a disappearance of cellular elements. These results agree with the pathologico-anatomic observations. During resolution of the cataract, the cellular elements appear also in the posterior chamber and in various regions of the crystalline lens. The intra-ocular flow is toward the ciliary process and the phagocytosis is demonstrated during the passage of the crystalline substance to the ciliary process. The author does not believe that the changes occurring in the rabbit's eye can be compared in toto to the human eye, but analogies can nevertheless be drawn.

Hospitalstidende, Copenhagen

75: 633-676 (May 5) 1932

*Course of Complement Binding in Gonorrheal Infection in Women. V. Genner, K. Antons and H. Boas.—p. 633.
Vitamin E and Vitamin E Therapy in Animals and Man. P. Voght-Møller.—p. 663.

Complement Binding in Gonorrheal Infection in Women.—Genner and his associates found a much less marked complement binding reaction in women with gonorrhea in whom the infection was limited to the cervical canal than in those in whom the oviducts also were affected, the difference being so considerable that a marked reaction, they say, may justifiably, in spite of the absence of clinical symptoms, be regarded as pointing to disease of the oviducts, and the more protracted the reaction, the more justifiable is this point of view. A persistent marked and positive complement binding reaction is due to latent foci, and the adnexa probably afford far better conditions for a retained inflammatory process than do the endometrium and cervical canal.

Svenska Läkaresällskapets Handlingar, Stockholm

58: 77-152, 1932

*Conditions of Immunity with Reference to Brucella Abortus. G. Rundberg.—p. 77.

Conditions of Immunity with Reference to Brucella Abortus.—Rundberg found that Brucella abortus in all respects resembles a bacterium sensitive to B lysin. Immune serums in vivo showed no absolutely definite protective action against a fatal dose of Brucella abortus. Of leukocytes, lymphocytes, thrombocytes and histocytes, experiments in vitro show bactericidal action only on the part of the leukocyte and thrombocyte extracts, more pronounced on the part of the leukocyte. In experiments on the protective action of leukocytes in vivo, the leukocytes together with immune serums seemed in some cases to exert a definite, not always complete protective action.

Ugeskrift for Læger, Copenhagen

94: 529-558 (May 26) 1932

Pulmonary Abscess. H. Abrahamsen.—p. 529.
*Basis for Operative Treatment of Cryptorchidism. H. Bjerre.—p. 534.

Basis for Operative Treatment of Cryptorchidism.—Bjerre says that cryptorchidism, if continued, causes sterility and often leads to complications in the groin; clinical examinations show apparently normal development of the testes in a considerable number of cases after operation, and in the great majority of the remaining cases they are uninjured by the intervention. Since the changes in the parenchyma, as established by histologic investigations, do not begin until puberty and since spontaneous recovery may occur in childhood, the preferred time for operative treatment of cryptorchidism is late childhood, unless complications indicate earlier treatment.